



SEQUENCE LISTING

SEQUENCING LISTING

<110> KYOWA HAKKO KOGYO CO., LTD

<111> THE CELL HAVING THE POTENTIALITY OF DIFFERENTIATION INTO  
CARDIOMYOCYTES

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<151> 1999-12-28

<150> PCT-JP00-01148

<151> 2000-02-28

<150> PCT-JP00-07741

<151> 2000-11-02

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<170> PatentIn Ver.2.0

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 Lys Gln Ala Gly Arg Gly Gly Val Cys Gly Arg Gly Arg Gly Arg  
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 Pro Pro Ser Gly Gly Ser Gly Leu Gly Asp Gly Gly Cys Gly  
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 Phe Pro Ser Gly Ser Ala Gly Pro Gly Pro Arg Gly Pro Arg Ala Thr  
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 165 170 175  
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 180 185 190  
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 195 200 205  
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Thr Gly Gln Val Ser Ala Ala Val Glu Lys Asn Pro Ala Val Trp Leu  
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Glu	Gln	Gly	Gly	Gly	Ser	Ala	Leu	Ala	Pro	Ser	Pro	Val	Ser	Gly	
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Val	Arg	Arg	Glu	Gly	Ala	Arg	Gly	Gly	Gly	Arg	Gly	Arg	Gly	Arg	Trp
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Gly	Arg	Gly													
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Phe Pro Ser Gly Ser Ala Gly Pro Gly Pro Arg Gly Pro Arg Ala Thr	
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acc aaa gtc aca aat cat cct agt aat aaa gtg aaa tca gac cca caa	816
Thr Lys Val Thr Asn His Pro Ser Asn Lys Val Lys Ser Asp Pro Gln	
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Arg Met Asn Glu Gln Pro Arg Gln Leu Phe Trp Glu Lys Arg Leu Gln	
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Cys Thr Gly Cys Cys Asn Thr Ser Ser Val Lys Cys Gln Pro Ser Arg		
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35	40	45
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Ala His Gly Val His Ala Thr Lys His Val Pro Glu Lys Arg Pro Leu	
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ccc att cgg agg aag aga agc atc gag gaa gct gtc ccc gct gtc tgc	288
Pro Ile Arg Arg Lys Arg Ser Ile Glu Glu Ala Val Pro Ala Val Cys	
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Lys Thr Arg Thr Val Ile Tyr Glu Ile Pro Arg Ser Gln Val Asp Pro	
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Thr Ser Ala Asn Phe Leu Ile Trp Pro Pro Cys Val Glu Val Lys Arg	
115 120 125	
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Cys Thr Gly Cys Cys Asn Thr Ser Ser Val Lys Cys Gln Pro Ser Arg	
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gtc cac cac cgc agc gtc aag gtg gcc aag gtg gaa tac gtc agg aag	480
Val His His Arg Ser Val Lys Val Ala Lys Val Glu Tyr Val Arg Lys	
145 150 155 160	
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Lys Pro Lys Leu Lys Glu Val Gln Val Arg Leu Glu Glu His Leu Glu	
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Lys Lys Pro Ile Phe Lys Lys Ala Thr Val Thr Leu Glu Asp His Leu			
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cac gga gac ccc gga gag gaa gat ggg gcc gag ttg gac ctg aac atg	192
His Gly Asp Pro Gly Glu Glu Asp Gly Ala Glu Leu Asp Leu Asn Met	
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Thr Arg Ser His Ser Gly Gly Glu Leu Glu Ser Leu Ala Arg Gly Arg	
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Arg Ser Leu Gly Ser Leu Thr Ile Ala Glu Pro Ala Met Ile Ala Glu	
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Cys Lys Thr Arg Thr Glu Val Phe Glu Ile Ser Arg Arg Leu Ile Asp	
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Arg Thr Asn Ala Asn Phe Leu Val Trp Pro Pro Cys Val Glu Val Gln	
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Arg Cys Ser Gly Cys Cys Asn Asn Arg Asn Val Gln Cys Arg Pro Thr	
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Gln Val Gln Leu Arg Pro Val Gln Val Arg Lys Ile Glu Ile Val Arg	
145 150 155 160	
aag aag cca atc ttt aag aag gcc acg gtg acg ctg gaa gac cac ctg	528
Lys Lys Pro Ile Phe Lys Lys Ala Thr Val Thr Leu Glu Asp His Leu	
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Ala Cys Lys Cys Glu Thr Val Ala Ala Ala Arg Pro Val Thr Arg Ser				
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Pro Gly Gly Ser Gln Glu Gln Arg Ala Lys Thr Pro Gln Thr Arg Val				
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acc att cgg acg gtg cga gtc cgc cgg ccc ccc aag ggc aag cac cgg				672
Thr Ile Arg Thr Val Arg Val Arg Arg Pro Pro Lys Gly Lys His Arg				
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aaa ttc aag cac acg cat gac aag acg gca ctg aag gag acc ctt gga				720
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Tyr Cys Lys Asn Gly Gly Phe Phe Leu Arg Ile His Pro Asp Gly Arg				
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Val Asp Gly Val Arg Glu Lys Ser Asp Pro His Ile Lys Leu Gln Leu				
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Gln Ala Glu Glu Arg Gly Val Val Ser Ile Lys Gly Val Cys Ala Asn				
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Arg Tyr Leu Ala Met Lys Glu Asp Gly Arg Leu Leu Ala Ser Lys Cys				
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Val Thr Asp Glu Cys Phe Phe Glu Arg Leu Glu Ser Asn Asn Tyr				
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Asn Thr Tyr Arg Ser Arg Lys Tyr Thr Ser Trp Tyr Val Ala Leu Lys				
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Arg Thr Gly Gln Tyr Lys Leu Gly Ser Lys Thr Gly Pro Gly Gln Lys				
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ggc	agc	ggc	gcc	ttc	ccg	ccc	ggc	cac	ttc	aag	gac	ccc	aag	cgg	ctg	96
Gly	Ser	Gly	Ala	Phe	Pro	Pro	Gly	His	Phe	Lys	Asp	Pro	Lys	Arg	Leu	
20	25	30														
tac	tgc	aaa	aac	ggg	ggc	ttc	ttc	ctg	cgc	atc	cac	ccc	gac	ggc	cga	144
Tyr	Cys	Lys	Asn	Gly	Gly	Phe	Phe	Leu	Arg	Ile	His	Pro	Asp	Gly	Arg	
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65	70	75													80	
cgt	tac	ctg	gct	atg	aag	gaa	gat	gga	aga	tta	ctg	gct	tct	aaa	tgt	288
Arg	Tyr	Leu	Ala	Met	Lys	Glu	Asp	Gly	Arg	Leu	Leu	Ala	Ser	Lys	Cys	
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Asn	Thr	Tyr	Arg	Ser	Arg	Lys	Tyr	Thr	Ser	Trp	Tyr	Val	Ala	Leu	Lys	
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Gly Leu Pro Glu Leu Arg Ala Glu Leu Gly Arg Ala Pro Ser Pro Ala			
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Lys Cys Ala Ser Ala Phe Pro Ala Ala Pro Ala Phe Tyr Pro Arg Ala			
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Tyr Ser Asp Pro Asp Pro Ala Lys Asp Pro Arg Ala Glu Lys Lys Glu			
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Leu Cys Ala Leu Gln Lys Ala Val Glu Leu Glu Lys Thr Glu Ala Asp			
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Asn Ala Glu Arg Pro Arg Ala Arg Arg Arg Lys Pro Arg Val Leu			
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Phe Ser Gln Ala Gln Val Tyr Glu Leu Glu Arg Arg Phe Lys Gln Gln			
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Arg Tyr Leu Ser Ala Pro Glu Arg Asp Gln Leu Ala Ser Val Leu Lys			
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Leu Thr Ser Thr Gln Val Lys Ile Trp Phe Gln Asn Arg Arg Tyr Lys			
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Cys Lys Arg Gln Arg Gln Asp Gln Thr Leu Glu Leu Val Gly Leu Pro			
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85	90	95	
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Tyr Ser Asp Pro Asp Pro Ala Lys Asp Pro Arg Ala Glu Lys Lys Glu			
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Asn Ala Glu Arg Pro Arg Ala Arg Arg Arg Lys Pro Arg Val Leu			
130	135	140	
ttc tcg cag gcg cag gtc tat gag ctg gag cgg cgc ttc aag cag cag			480
Phe Ser Gln Ala Gln Val Tyr Glu Leu Glu Arg Arg Phe Lys Gln Gln			
145	150	155	160
cgg tac ctg tcg gcc ccc gaa cgc gac cag ctg gcc agc gtg ctg aaa			528
Arg Tyr Leu Ser Ala Pro Glu Arg Asp Gln Leu Ala Ser Val Leu Lys			
165	170	175	
ctc acg tcc acg cag gtc aag atc tgg ttc cag aac cgg cgc tac aag			576
Leu Thr Ser Thr Gln Val Lys Ile Trp Phe Gln Asn Arg Arg Tyr Lys			
180	185	190	
tgc aag cgg cag cgg cag gac cag act ctg gag ctg gtg ggg ctg ccc			624
Cys Lys Arg Gln Arg Gln Asp Gln Thr Leu Glu Leu Val Gly Leu Pro			
195	200	205	
ccg ccg ccg ccg cct gcc cgc agg atc gcg gtg cca gtg ctg gtg			672
Pro Pro Pro Pro Pro Ala Arg Arg Ile Ala Val Pro Val Leu Val			
210	215	220	
cgc gat ggc aag cca tgc cta ggg gac tcg gcg ccc tac gcg cct gcc			720
Arg Asp Gly Lys Pro Cys Leu Gly Asp Ser Ala Pro Tyr Ala Pro Ala			
225	230	235	240
tac ggc gtg ggc ctc aat ccc tac ggt tat aac gcc tac ccc gcc tat			768
Tyr Gly Val Gly Leu Asn Pro Tyr Gly Tyr Asn Ala Tyr Pro Ala Tyr			
245	250	255	
ccg ggt tac ggc ggc gcg gcc tgc agc cct ggc tac agc tgc act gcc			816

Pro	Gly	Tyr	Gly	Gly	Ala	Ala	Cys	Ser	Pro	Gly	Tyr	Ser	Cys	Thr	Ala	
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gct	tac	ccc	gcc	ggg	cct	tcc	cca	gcg	cag	ccg	gcc	act	gcc	gcc	gcc	864
Ala	Tyr	Pro	Ala	Gly	Pro	Ser	Pro	Ala	Gln	Pro	Ala	Thr	Ala	Ala	Ala	
275								280					285			
aac	aac	aac	ttc	gtg	aac	ttc	ggc	gtc	ggg	gac	ttg	aat	gcg	gtt	cag	912
Asn	Asn	Asn	Phe	Val	Asn	Phe	Gly	Val	Gly	Asp	Leu	Asn	Ala	Val	Gln	
290							295					300				
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Ser	Pro	Gly	Ile	Pro	Gln	Ser	Asn	Ser	Gly	Val	Ser	Thr	Leu	His	Gly	
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Ile	Arg	Ala	Trp													972
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Ala	Ser	Ser	Pro	Val	Tyr	Leu	Pro	Thr	Pro	Arg	Val	Pro	Ser	Ser	Val	
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Leu	Gly	Leu	Ser	Tyr	Leu	Gln	Gly	Gly	Gly	Ala	Gly	Ser	Ala	Ser	Gly	
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Gly	Pro	Ser	Gly	Gly	Ser	Pro	Gly	Gly	Ala	Ala	Ser	Gly	Ala	Gly	Pro	
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Gly	Thr	Gln	Gln	Gly	Ser	Pro	Gly	Trp	Ser	Gln	Ala	Gly	Ala	Thr	Gly	
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Thr	Thr	Gly	Ser	Leu	Ala	Arg	Glu									
115								120					125			
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145	150	155
Pro Tyr Pro Ala Tyr	Met Ala Asp Val	Gly Ala Ser Trp Ala Ala Ala
165	170	175
Ala Ala Ala Ser Ala	Gly Pro Phe Asp Ser	Pro Val Leu His Ser Leu
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Pro Gly Arg Ala Asn	Pro Ala Ala Arg His	Pro Asn Leu Asp Met Phe
195	200	205
Asp Asp Phe Ser	Glu Gly Arg	Glu Cys Val Asn Cys Gly Ala Met Ser
210	215	220
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225	230	235
Cys Gly Leu Tyr His	Lys Met Asn Gly	Ile Asn Arg Pro Leu Ile Lys
245	250	255
Pro Gln Arg Arg	Leu Ser Ala Ser	Arg Arg Val Gly Leu Ser Cys Ala
260	265	270
Asn Cys Gln Thr	Thr Thr Thr	Leu Trp Arg Arg Asn Ala Glu Gly
275	280	285
Glu Pro Val Cys Asn	Ala Cys Gly	Leu Tyr Met Lys Leu His Gly Val
290	295	300
Pro Arg Pro Leu Ala	Met Arg Lys Glu Gly	Ile Gln Thr Arg Lys Arg
305	310	315
Lys Pro Lys Asn	Leu Asn Lys Ser	Lys Thr Pro Ala Ala Pro Ser Gly
325	330	335
Ser Glu Ser Leu Pro	Pro Ala Ser Gly	Ala Ser Ser Asn Ser Ser Asn
340	345	350
Ala Thr Thr Ser	Ser Ser Glu Glu	Met Arg Pro Ile Lys Thr Glu Pro
355	360	365
Gly Leu Ser Ser His	Tyr Gly His Ser	Ser Ser Val Ser Gln Thr Phe
370	375	380
Ser Val Ser Ala Met	Ser Gly His	Pro Ser Ile His Pro Val Leu
385	390	395
Ser Ala Leu Lys	Leu Ser Pro Gln	Gly Tyr Ala Ser Pro Val Ser Gln
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Ala Tyr Gln Ala Gly Gly Pro Gly Pro Phe Met His Gly Ala Gly Ala		
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Ala Ser Ser Pro Val Tyr Leu Pro Thr Pro Arg Val Pro Ser Ser Val		
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Leu Gly Leu Ser Tyr Leu Gln Gly Gly Ala Gly Ser Ala Ser Gly		
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ggc ccc tcg ggc agc ccc ggt ggg gcc gcg tct ggt gcg ggg ccc 240		
Gly Pro Ser Gly Gly Ser Pro Gly Gly Ala Ala Ser Gly Ala Gly Pro		
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Gly Thr Gln Gln Gly Ser Pro Gly Trp Ser Gln Ala Gly Ala Thr Gly		
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Ala Ala Tyr Thr Pro Pro Val Ser Pro Arg Phe Ser Phe Pro Gly		
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Thr Thr Gly Ser Leu Ala Ala Ala Ala Ala Ala Ala Arg Glu		
115	120	125
gct gcg gcc tac agc agt ggc ggc gga gcg gcg ggt gcg ggc ctg gcg 432		

Ala Ala Ala Tyr Ser Ser Gly Gly Gly Ala Ala Gly Ala Gly Leu Ala			
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ggc cgc gag cag tac ggg cgc gcc ttc gcg ggc tcc tac tcc agc			480
Gly Arg Glu Gln Tyr Gly Arg Ala Gly Phe Ala Gly Ser Tyr Ser Ser			
145	150	155	160
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Pro Tyr Pro Ala Tyr Met Ala Asp Val Gly Ala Ser Trp Ala Ala Ala			
165	170	175	
gcc gcc gcc tcc gcc ggc ccc ttc gac agc ccg gtc ctg cac agc ctg			576
Ala Ala Ala Ser Ala Gly Pro Phe Asp Ser Pro Val Leu His Ser Leu			
180	185	190	
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Pro Gly Arg Ala Asn Pro Ala Ala Arg His Pro Asn Leu Asp Met Phe			
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Asp Asp Phe Ser Glu Gly Arg Glu Cys Val Asn Cys Gly Ala Met Ser			
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Thr Pro Leu Trp Arg Arg Asp Gly Thr Gly His Tyr Leu Cys Asn Ala			
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tgt ggc ctc tac cac aag atg aac ggc atc aac cgg ccg ctc atc aag			768
Cys Gly Leu Tyr His Lys Met Asn Gly Ile Asn Arg Pro Leu Ile Lys			
245	250	255	
cct cag cgc cgg ctg tcc gcc tcc cgc cga gtg ggc ctc tcc tgt gcc			816
Pro Gln Arg Arg Leu Ser Ala Ser Arg Arg Val Gly Leu Ser Cys Ala			
260	265	270	
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Asn Cys Gln Thr Thr Thr Leu Trp Arg Arg Asn Ala Glu Gly			
275	280	285	
gag cct gtg tgc aat gcc tgc ggc ctc tac atg aag ctc cac ggg gtg			912
Glu Pro Val Cys Asn Ala Cys Gly Leu Tyr Met Lys Leu His Gly Val			
290	295	300	
ccc agg cct ctt gca atg cgg aaa gag ggg atc caa acc aga aaa cgg			960
Pro Arg Pro Leu Ala Met Arg Lys Glu Gly Ile Gln Thr Arg Lys Arg			
305	310	315	320
aag ccc aag aac ctg aat aaa tct aag aca cca gca gct cct tca ggc			1008

Lys	Pro	Lys	Asn	Leu	Asn	Lys	Ser	Thr	Pro	Ala	Ala	Pro	Ser	Gly		
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agt	gag	agc	ctt	cct	ccc	gcc	agc	ggt	gtc	tcc	agc	aac	tcc	agc	aac	1056
Ser	Glu	Ser	Leu	Pro	Pro	Ala	Ser	Gly	Ala	Ser	Ser	Asn	Ser	Ser	Asn	
340															350	
gcc	acc	acc	agc	agc	gag	gag	atg	cgt	ccc	atc	aag	acg	gag	cct	1104	
Ala	Thr	Thr	Ser	Ser	Glu	Glu	Met	Arg	Pro	Ile	Lys	Thr	Glu	Pro		
355															365	
ggc	ctg	tca	tct	cac	tac	ggg	cac	agc	agc	tcc	gtg	tcc	cag	acg	ttc	1152
Gly	Leu	Ser	Ser	His	Tyr	Gly	His	Ser	Ser	Ser	Val	Ser	Gln	Thr	Phe	
370															380	
tca	gtc	agt	gcf	atg	tct	ggc	cat	ggg	ccc	tcc	atc	cac	cct	gtc	ctc	1200
Ser	Val	Ser	Ala	Met	Ser	Gly	His	Gly	Pro	Ser	Ile	His	Pro	Val	Leu	
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Ser	Ala	Leu	Lys	Leu	Ser	Pro	Gln	Gly	Tyr	Ala	Ser	Pro	Val	Ser	Gln	
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Ser	Pro	Gln	Thr	Ser	Ser	Lys	Gln	Asp	Ser	Trp	Asn	Ser	Leu	Val	Leu	
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gcc	gac	agt	cac	ggg	gac	ata	atc	act	gcf							1326
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Tyr	Glu	Leu	Ser	Val	Leu	Cys	Asp	Cys	Glu	Ile	Ala	Leu	Ile	Ile	Phe	
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Val Leu Leu Lys Tyr Thr Glu Tyr Asn Glu Pro His Glu Ser Arg Thr  
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 Asn Ser Asp Ile Val Glu Ala Leu Asn Lys Lys Glu His Arg Gly Cys  
 85 90 95  
 Asp Ser Pro Asp Pro Asp Thr Ser Tyr Val Leu Thr Pro His Thr Glu  
 100 105 110  
 Glu Lys Tyr Lys Lys Ile Asn Glu Glu Phe Asp Asn Met Met Arg Asn  
 115 120 125  
 His Lys Ile Ala Pro Gly Leu Pro Pro Gln Asn Phe Ser Met Ser Val  
 130 135 140  
 Thr Val Pro Val Thr Ser Pro Asn Ala Leu Ser Tyr Thr Asn Pro Gly  
 145 150 155 160  
 Ser Ser Leu Val Ser Pro Ser Leu Ala Ala Ser Ser Thr Leu Thr Asp  
 165 170 175  
 Ser Ser Met Leu Ser Pro Pro Gln Thr Thr Leu His Arg Asn Val Ser  
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 Pro Gly Ala Pro Gln Arg Pro Pro Ser Thr Gly Asn Ala Gly Gly Met  
 195 200 205  
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 Val Gly Asn Gly Phe Val Asn Ser Arg Ala Ser Pro Asn Leu Ile Gly  
 225 230 235 240  
 Ala Thr Gly Ala Asn Ser Leu Gly Lys Val Met Pro Thr Lys Ser Pro  
 245 250 255  
 Pro Pro Pro Gly Gly Asn Leu Gly Met Asn Ser Arg Lys Pro Asp  
 260 265 270  
 Leu Arg Val Val Ile Pro Pro Ser Ser Lys Gly Met Met Pro Pro Leu  
 275 280 285  
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 290 295 300  
 Gln Ala Thr Gln Pro Leu Ala Thr Pro Val Val Ser Val Thr Thr Pro  
 305 310 315 320  
 Ser Leu Pro Pro Gln Gly Leu Val Tyr Ser Ala Met Pro Thr Ala Tyr  
 325 330 335  
 Asn Thr Asp Tyr Ser Leu Thr Ser Ala Asp Leu Ser Ala Leu Gln Gly  
 340 345 350

Phe Asn Ser Pro Gly Met Leu Ser Leu Gly Gln Val Ser Ala Trp Gln  
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 Gln His His Leu Gly Gln Ala Ala Leu Ser Ser Leu Val Ala Gly Gly  
                          370                 375                 380  
 Gln Leu Ser Gln Gly Ser Asn Leu Ser Ile Asn Thr Asn Gln Asn Ile  
                          385                 390                 395                 400  
 Ser Ile Lys Ser Glu Pro Ile Ser Pro Pro Arg Asp Arg Met Thr Pro  
                          405                 410                 415  
 Ser Gly Phe Gln Pro Pro  
                          420                 425                 430  
 Pro Pro Pro Gln Pro Gln Pro Gln Pro Pro Gln Pro Gln Pro Arg Gln  
                          435                 440                 445  
 Glu Met Gly Arg Ser Pro Val Asp Ser Leu Ser Ser Ser Ser Ser  
                          450                 455                 460  
 Tyr Asp Gly Ser Asp Arg Glu Asp Pro Arg Gly Asp Phe His Ser Pro  
                          465                 470                 475                 480  
 Ile Val Leu Gly Arg Pro Pro Asn Thr Glu Asp Arg Glu Ser Pro Ser  
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 cga cag gtc act ttt aca aag aga aag ttt gga tta atg aag aaa gcc   96  
 Arg Gln Val Thr Phe Thr Lys Arg Lys Phe Gly Leu Met Lys Lys Ala  
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 tat gaa ctt agt gtg ctc tgt gac tgt gaa ata gca ctc atc att ttc   144  
 Tyr Glu Leu Ser Val Leu Cys Asp Cys Glu Ile Ala Leu Ile Phe

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Asn Ser Ser Asn Lys Leu Phe Gln Tyr Ala Ser Thr Asp Met Asp Lys			
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Val Leu Leu Lys Tyr Thr Glu Tyr Asn Glu Pro His Glu Ser Arg Thr			
65	70	75	80
aac tcg gat att gtt gag gct ctg aac aag aag gaa cac aga ggg tgc			288
Asn Ser Asp Ile Val Glu Ala Leu Asn Lys Lys Glu His Arg Gly Cys			
85	90	95	
gac agc cca gac cct gat act tca tat gtg cta act cca cat aca gaa			336
Asp Ser Pro Asp Pro Asp Thr Ser Tyr Val Leu Thr Pro His Thr Glu			
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gaa aaa tat aaa aaa att aat gag gaa ttt gat aat atg atg cgg aat			384
Glu Lys Tyr Lys Lys Ile Asn Glu Glu Phe Asp Asn Met Met Arg Asn			
115	120	125	
cat aaa atc gca cct ggt ctg cca cct cag aac ttt tca atg tct gtc			432
His Lys Ile Ala Pro Gly Leu Pro Pro Gln Asn Phe Ser Met Ser Val			
130	135	140	
aca gtt cca gtg acc agc ccc aat gct ttg tcc tac act aac cca ggg			480
Thr Val Pro Val Thr Ser Pro Asn Ala Leu Ser Tyr Thr Asn Pro Gly			
145	150	155	160
agt tca ctg gtg tcc cca tct ttg gca gcc agc tca acg tta aca gat			528
Ser Ser Leu Val Ser Pro Ser Leu Ala Ala Ser Ser Thr Leu Thr Asp			
165	170	175	
tca agc atg ctc tct cca cct caa acc aca tta cat aga aat gtg tct			576
Ser Ser Met Leu Ser Pro Pro Gln Thr Thr Leu His Arg Asn Val Ser			
180	185	190	
cct gga gct cct cag aga cca cca agt act ggc aat gca ggt ggg atg			624
Pro Gly Ala Pro Gln Arg Pro Pro Ser Thr Gly Asn Ala Gly Gly Met			
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ttg agc act aca gac ctc aca gtg cca aat gga gct gga agc agt cca			672
Leu Ser Thr Thr Asp Leu Thr Val Pro Asn Gly Ala Gly Ser Ser Pro			
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Val Gly Asn Gly Phe Val Asn Ser Arg Ala Ser Pro Asn Leu Ile Gly			

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Ala Thr Gly Ala Asn Ser Leu Gly Lys Val Met Pro Thr Lys Ser Pro				
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Pro Pro Pro Gly Gly Asn Leu Gly Met Asn Ser Arg Lys Pro Asp				
260	265	270		
ctt cga gtt gtc atc ccc cct tca agc aag ggc atg atg cct cca cta				864
Leu Arg Val Val Ile Pro Pro Ser Ser Lys Gly Met Met Pro Pro Leu				
275	280	285		
tcg gag gaa gag gaa ttg gag ttg aac acc caa agg atc agt agt tct				912
Ser Glu Glu Glu Leu Glu Leu Asn Thr Gln Arg Ile Ser Ser Ser				
290	295	300		
caa gcc act caa cct ctt gct acc cca gtc gtg tct gtg aca acc cca				960
Gln Ala Thr Gln Pro Leu Ala Thr Pro Val Val Ser Val Thr Thr Pro				
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agc ttg cct ccg caa gga ctt gtg tac tca gca atg ccg act gcc tac				1008
Ser Leu Pro Pro Gln Gly Leu Val Tyr Ser Ala Met Pro Thr Ala Tyr				
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Asn Thr Asp Tyr Ser Leu Thr Ser Ala Asp Leu Ser Ala Leu Gln Gly				
340	345	350		
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Phe Asn Ser Pro Gly Met Leu Ser Leu Gly Gln Val Ser Ala Trp Gln				
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Gln His His Leu Gly Gln Ala Ala Leu Ser Ser Leu Val Ala Gly Gly				
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Gln Leu Ser Gln Gly Ser Asn Leu Ser Ile Asn Thr Asn Gln Asn Ile				
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Ser Ile Lys Ser Glu Pro Ile Ser Pro Pro Arg Asp Arg Met Thr Pro				
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Ser Gly Phe Gln Pro Pro				

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cca cca ccg cag ccc cag cca caa ccc ccg cag ccc cag ccc cga cag			1344
Pro Pro Pro Gln Pro Gln Pro Gln Pro Pro Gln Pro Gln Pro Arg Gln			
435	440	445	
gaa atg ggg cgc tcc cct gtg gac agt ctg agc agc tct agt agc tcc			1392
Glu Met Gly Arg Ser Pro Val Asp Ser Leu Ser Ser Ser Ser Ser			
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Tyr Asp Gly Ser Asp Arg Glu Asp Pro Arg Gly Asp Phe His Ser Pro			
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att gtg ctt ggc cga ccc cca aac act gag gac aga gaa agc cct tct			1488
Ile Val Leu Gly Arg Pro Pro Asn Thr Glu Asp Arg Glu Ser Pro Ser			
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Tyr Glu Leu Ser Val Leu Cys Asp Cys Glu Ile Ala Leu Ile Phe			
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Asn Ser Ala Asn Arg Leu Phe Gln Tyr Ala Ser Thr Asp Met Asp Arg			
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Val Leu Leu Lys Tyr Thr Glu Tyr Ser Glu Pro His Glu Ser Arg Thr			
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Asn Thr Asp Ile Leu Glu Thr Leu Lys Arg Arg Gly Ile Gly Leu Asp			
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Gly Pro Glu Leu Glu Pro Asp Glu Gly Pro Glu Glu Pro Gly Glu Lys			
100	105	110	
Phe Arg Arg Leu Ala Gly Glu Gly Asp Pro Ala Leu Pro Arg Pro			

115	120	125
Arg Leu Tyr Pro Ala Ala Pro Ala Met Pro Ser Pro Asp Val Val Tyr		
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Gly Ala Leu Pro Pro Pro Gly Cys Asp Pro Ser Gly Leu Gly Glu Ala		
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Leu Pro Ala Gln Ser Arg Pro Ser Pro Phe Arg Pro Ala Ala Pro Lys		
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Ala Gly Pro Pro Gly Leu Val His Pro Leu Phe Ser Pro Ser His Leu		
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Thr Ser Lys Thr Pro Pro Pro Leu Tyr Leu Pro Thr Glu Gly Arg Arg		
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Ser Asp Leu Pro Gly Gly Leu Ala Gly Pro Arg Gly Gly Leu Asn Thr		
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Ser Arg Ser Leu Tyr Ser Gly Leu Gln Asn Pro Cys Ser Thr Ala Thr		
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Pro Gly Pro Pro Leu Gly Ser Phe Pro Phe Leu Pro Gly Gly Pro Pro		
245	250	255
Val Gly Ala Glu Ala Trp Ala Arg Arg Val Pro Gln Pro Ala Ala Pro		
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Pro Arg Arg Pro Pro Gln Ser Ala Ser Ser Leu Ser Ala Ser Leu Arg		
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Pro Pro Gly Ala Pro Ala Thr Phe Leu Arg Pro Ser Pro Ile Pro Cys		
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Ser Ser Pro Gly Pro Trp Gln Ser Leu Cys Gly Leu Gly Pro Pro Cys		
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Ala Gly Cys Pro Trp Pro Thr Ala Gly Pro Gly Arg Arg Ser Pro Gly		
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cgg	cag	gtg	acg	ttc	acc	aag	cgg	aag	ttc	ggg	ctg	atg	aag	aag	gcc	96
Arg	Gln	Val	Thr	Phe	Thr	Lys	Arg	Lys	Phe	Gly	Leu	Met	Lys	Lys	Ala	
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tat	gag	ctg	agc	gtg	ctc	tgt	gac	tgt	gag	ata	gcc	ctc	atc	atc	ttc	144
Tyr	Glu	Leu	Ser	Val	Leu	Cys	Asp	Cys	Glu	Ile	Ala	Leu	Ile	Ile	Phe	
35			40												45	
aac	agc	gcc	aac	cgc	ctc	ttc	cag	tat	gcc	agc	acg	gac	atg	gac	cgt	192
Asn	Ser	Ala	Asn	Arg	Leu	Phe	Gln	Tyr	Ala	Ser	Thr	Asp	Met	Asp	Arg	
50			55												60	
gtg	ctg	ctg	aag	tac	aca	gag	tac	agc	gag	ccc	cac	gag	agc	cgc	acc	240
Val	Leu	Leu	Lys	Tyr	Thr	Glu	Tyr	Ser	Glu	Pro	His	Glu	Ser	Arg	Thr	
65			70												80	
aac	act	gac	atc	ctc	gag	acg	ctg	aag	cgg	agg	ggc	att	ggc	ctc	gat	288
Asn	Thr	Asp	Ile	Leu	Glu	Thr	Leu	Lys	Arg	Arg	Gly	Ile	Gly	Leu	Asp	
85			90												95	
ggg	cca	gag	ctg	gag	ccg	gat	gaa	ggg	cct	gag	gag	cca	gga	gag	aag	336
Gly	Pro	Glu	Leu	Glu	Pro	Asp	Glu	Gly	Pro	Glu	Glu	Pro	Gly	Glu	Lys	
100			105												110	
ttt	cgg	agg	ctg	gca	ggc	gaa	ggg	ggt	gat	ccg	gcc	ttg	ccc	cga	ccc	384
Phe	Arg	Arg	Leu	Ala	Gly	Glu	Gly	Gly	Asp	Pro	Ala	Leu	Pro	Arg	Pro	
115			120												125	
cgg	ctg	tat	cct	gca	gct	cct	gct	atg	ccc	agc	cca	gat	gtg	gtc	tac	432
Arg	Leu	Tyr	Pro	Ala	Ala	Pro	Ala	Met	Pro	Ser	Pro	Asp	Val	Val	Tyr	
130			135												140	
ggg	gcc	tta	ccg	cca	cca	ggc	tgt	gac	ccc	agt	ggg	ctt	ggg	gaa	gca	480
Gly	Ala	Leu	Pro	Pro	Pro	Gly	Cys	Asp	Pro	Ser	Gly	Leu	Gly	Glu	Ala	
145			150												160	
ctg	ccc	gcc	cag	agc	cgc	cca	tct	ccc	ttc	cga	cca	gca	gcc	ccc	aaa	528
Leu	Pro	Ala	Gln	Ser	Arg	Pro	Ser	Pro	Phe	Arg	Pro	Ala	Ala	Pro	Lys	
165			170												175	

gcc ggg ccc cca ggc ctg gtg cac cct ctc ttc tca cca agc cac ctc	576
Ala Gly Pro Pro Gly Leu Val His Pro Leu Phe Ser Pro Ser His Leu	
180 185 190	
acc agc aag aca cca ccc cca ctg tac ctg ccg acg gaa ggg cgg agg	624
Thr Ser Lys Thr Pro Pro Leu Tyr Leu Pro Thr Glu Gly Arg Arg	
195 200 205	
tca gac ctg cct ggt ggc ctg gct ggg ccc cga ggg gga cta aac acc	672
Ser Asp Leu Pro Gly Gly Leu Ala Gly Pro Arg Gly Gly Leu Asn Thr	
210 215 220	
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Ser Arg Ser Leu Tyr Ser Gly Leu Gln Asn Pro Cys Ser Thr Ala Thr	
225 230 235 240	
ccc gga ccc cca ctg ggg agc ttc ccc ttc ctc ccc gga ggc ccc cca	768
Pro Gly Pro Pro Leu Gly Ser Phe Pro Phe Leu Pro Gly Gly Pro Pro	
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gtg ggg gcc gaa gcc tgg gcg agg agg gtc ccc caa ccc gcg gcg cct	816
Val Gly Ala Glu Ala Trp Ala Arg Arg Val Pro Gln Pro Ala Ala Pro	
260 265 270	
ccc cgc cga ccc ccc cag tca gca tca agt ctg agc gcc tct ctc cgg	864
Pro Arg Arg Pro Pro Gln Ser Ala Ser Ser Leu Ser Ala Ser Leu Arg	
275 280 285	
ccc ccg ggg gcc ccg gcg act ttc cta aga cct tcc cct atc cct tgc	912
Pro Pro Gly Ala Pro Ala Thr Phe Leu Arg Pro Ser Pro Ile Pro Cys	
290 295 300	
tcc tcg ccc ggt ccc tgg cag agc ctc tgc ggc ctg ggc ccg ccc tgc	960
Ser Ser Pro Gly Pro Trp Gln Ser Leu Cys Gly Leu Gly Pro Pro Cys	
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gcc ggc tgc cct tgg ccg acg gct ggc ccc ggt agg aga tca ccc ggt	1008
Ala Gly Cys Pro Trp Pro Thr Ala Gly Pro Gly Arg Arg Ser Pro Gly	
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ggc acc agc cca gag cgc tcg cca ggt acg gcg agg gca cgt ggg gac	1056
Gly Thr Ser Pro Glu Arg Ser Pro Gly Thr Ala Arg Ala Arg Gly Asp	
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ccc acc tcc ctc cag gcc tct tca gag aag acc caa cag	1095
Pro Thr Ser Leu Gln Ala Ser Ser Glu Lys Thr Gln Gln	
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Tyr Glu Leu Ser Val Leu Cys Asp Cys Glu Ile Ala Leu Ile Ile Phe  
35 40 45  
Asn Ser Thr Asn Lys Leu Phe Gln Tyr Ala Ser Thr Asp Met Asp Lys  
50 55 60  
Val Leu Leu Lys Tyr Thr Glu Tyr Asn Glu Pro His Glu Ser Arg Thr  
65 70 75 80  
Asn Ser Asp Ile Val Glu Thr Leu Arg Lys Lys Gly Leu Asn Gly Cys  
85 90 95  
Asp Ser Pro Asp Pro Asp Ala Asp Asp Ser Val Gly His Ser Pro Glu  
100 105 110  
Ser Glu Asp Lys Tyr Arg Lys Ile Asn Glu Asp Ile Asp Leu Met Ile  
115 120 125  
Ser Arg Gln Arg Leu Cys Ala Val Pro Pro Pro Asn Phe Glu Met Pro  
130 135 140  
Val Ser Ile Pro Val Ser Ser His Asn Ser Leu Val Tyr Ser Asn Pro  
145 150 155 160  
Val Ser Ser Leu Gly Asn Pro Asn Leu Leu Pro Leu Ala His Pro Ser  
165 170 175  
Leu Gln Arg Asn Ser Met Ser Pro Gly Val Thr His Arg Pro Pro Ser  
180 185 190  
Ala Gly Asn Thr Gly Gly Leu Met Gly Gly Asp Leu Thr Ser Gly Ala  
195 200 205  
Gly Thr Ser Ala Gly Asn Gly Tyr Gly Asn Pro Arg Asn Ser Pro Gly  
210 215 220  
Leu Leu Val Ser Pro Gly Asn Leu Asn Lys Asn Met Gln Ala Lys Ser  
225 230 235 240  
Pro Pro Pro Met Asn Leu Gly Met Asn Asn Arg Lys Pro Asp Leu Arg

245	250	255
Val Leu Ile Pro Pro Gly Ser Lys Asn Thr Met Pro Ser Val Asn Gln		
260	265	270
Arg Ile Asn Asn Ser Gln Ser Ala Gln Ser Leu Ala Thr Pro Val Val		
275	280	285
Ser Val Ala Thr Pro Thr Leu Pro Gly Gln Gly Met Gly Gly Tyr Pro		
290	295	300
Ser Ala Ile Ser Thr Thr Tyr Gly Thr Glu Tyr Ser Leu Ser Ser Ala		
305	310	315
Asp Leu Ser Ser Leu Ser Gly Phe Asn Thr Ala Ser Ala Leu His Leu		
325	330	335
Gly Ser Val Thr Gly Trp Gln Gln His Leu His Asn Met Pro Pro		
340	345	350
Ser Ala Leu Ser Gln Leu Gly Ala Cys Thr Ser Thr His Leu Ser Gln		
355	360	365
Ser Ser Asn Leu Ser Leu Pro Ser Thr Gln Ser Leu Asn Ile Lys Ser		
370	375	380
Glu Pro Val Ser Pro Pro Arg Asp Arg Thr Thr Thr Pro Ser Arg Tyr		
385	390	395
Pro Gln His Thr Arg His Glu Ala Gly Arg Ser Pro Val Asp Ser Leu		
405	410	415
Ser Ser Cys Ser Ser Ser Tyr Asp Gly Ser Asp Arg Glu Asp His Arg		
420	425	430
Asn Glu Phe His Ser Pro Ile Gly Leu Thr Arg Pro Ser Pro Asp Glu		
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450	455	460
Thr		
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aga cag gtg aca ttt aca aag agg aaa ttt ggg ttg atg aag aag gct	96
Arg Gln Val Thr Phe Thr Lys Arg Lys Phe Gly Leu Met Lys Lys Ala	
20 25 30	
tat gag ctg agc gtg ctg tgt gac tgt gag att gcg ctg atc atc ttc	144
Tyr Glu Leu Ser Val Leu Cys Asp Cys Glu Ile Ala Leu Ile Phe	
35 40 45	
aac agc acc aac aag ctg ttc cag tat gcc agc acc gac atg gac aaa	192
Asn Ser Thr Asn Lys Leu Phe Gln Tyr Ala Ser Thr Asp Met Asp Lys	
50 55 60	
gtg ctt ctc aag tac acg gag tac aac gag ccg cat gag agc cgg aca	240
Val Leu Leu Lys Tyr Thr Glu Tyr Asn Glu Pro His Glu Ser Arg Thr	
65 70 75 80	
aac tca gac atc gtg gag acg ttg aga aag aag ggc ctt aat ggc tgt	288
Asn Ser Asp Ile Val Glu Thr Leu Arg Lys Lys Gly Leu Asn Gly Cys	
85 90 95	
gac agc cca gac ccc gat gcg gac gat tcc gta ggt cac agc cct gag	336
Asp Ser Pro Asp Pro Asp Ala Asp Asp Ser Val Gly His Ser Pro Glu	
100 105 110	
tct gag gac aag tac agg aaa att aac gaa gat att gat cta atg atc	384
Ser Glu Asp Lys Tyr Arg Lys Ile Asn Glu Asp Ile Asp Leu Met Ile	
115 120 125	
agc agg caa aga ttg tgt gct gtt cca cct ccc aac ttc gag atg cca	432
Ser Arg Gln Arg Leu Cys Ala Val Pro Pro Asn Phe Glu Met Pro	
130 135 140	
gtc tcc atc cca gtg tcc agc cac aac agt ttg gtg tac agc aac cct	480
Val Ser Ile Pro Val Ser Ser His Asn Ser Leu Val Tyr Ser Asn Pro	
145 150 155 160	
gtc agc tca ctg gga aac ccc aac cta ttg cca ctg gct cac cct tct	528
Val Ser Ser Leu Gly Asn Pro Asn Leu Leu Pro Leu Ala His Pro Ser	
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ctg cag agg aat agt atg tct cct ggt gta aca cat cga cct cca agt	576
Leu Gln Arg Asn Ser Met Ser Pro Gly Val Thr His Arg Pro Pro Ser	
180 185 190	

gca ggt aac aca ggt ggt ctg atg ggt gga gac ctc acg tct ggt gca	624
Ala Gly Asn Thr Gly Gly Leu Met Gly Gly Asp Leu Thr Ser Gly Ala	
195 200 205	
ggt acc agt gca ggg aac ggg tat ggc aat ccc cga aac tca cca ggt	672
Gly Thr Ser Ala Gly Asn Gly Tyr Gly Asn Pro Arg Asn Ser Pro Gly	
210 215 220	
ctg ctg gtc tca cct ggt aac ttg aac aag aat atg caa gca aaa tct	720
Leu Leu Val Ser Pro Gly Asn Leu Asn Lys Asn Met Gln Ala Lys Ser	
225 230 235 240	
cct ccc cca atg aat tta gga atg aat aac cgt aaa cca gat ctc cga	768
Pro Pro Pro Met Asn Leu Gly Met Asn Asn Arg Lys Pro Asp Leu Arg	
245 250 255	
gtt ctt att cca cca ggc agc aag aat acg atg cca tca gtg aat caa	816
Val Leu Ile Pro Pro Gly Ser Lys Asn Thr Met Pro Ser Val Asn Gln	
260 265 270	
agg ata aat aac tcc cag tcg gct cag tca ttg gct acc cca gtg gtt	864
Arg Ile Asn Asn Ser Gln Ser Ala Gln Ser Leu Ala Thr Pro Val Val	
275 280 285	
tcc gta gca act cct act tta cca gga caa gga atg gga gga tat cca	912
Ser Val Ala Thr Pro Thr Leu Pro Gly Gln Gly Met Gly Gly Tyr Pro	
290 295 300	
tca gcc att tca aca aca tat ggt acc gag tac tct ctg agt agt gca	960
Ser Ala Ile Ser Thr Thr Tyr Gly Thr Glu Tyr Ser Leu Ser Ser Ala	
305 310 315 320	
gac ctg tca tct ctg tct ggg ttt aac acc gcc agc gct ctt cac ctt	1008
Asp Leu Ser Ser Leu Ser Gly Phe Asn Thr Ala Ser Ala Leu His Leu	
325 330 335	
ggt tca gta act ggc tgg caa cag caa cac cta cat aac atg cca cca	1056
Gly Ser Val Thr Gly Trp Gln Gln His Leu His Asn Met Pro Pro	
340 345 350	
tct gcc ctc agt cag ttg gga gct tgc act agc act cat tta tct cag	1104
Ser Ala Leu Ser Gln Leu Gly Ala Cys Thr Ser Thr His Leu Ser Gln	
355 360 365	
agt tca aat ctc tcc ctg cct act caa agc ctc aac atc aag tca	1152
Ser Ser Asn Leu Ser Leu Pro Ser Thr Gln Ser Leu Asn Ile Lys Ser	
370 375 380	

gaa cct gtt tct cct cct aga gac cgt acc acc acc cct tcg aga tac	1200
Glu Pro Val Ser Pro Pro Arg Asp Arg Thr Thr Thr Pro Ser Arg Tyr	
385 390 395 400	
cca caa cac acg cgc cac gag gcg ggg aga tct cct gtt gac agc ttg	1248
Pro Gln His Thr Arg His Glu Ala Gly Arg Ser Pro Val Asp Ser Leu	
405 410 415	
agc agc tgt agc agt tcg tac gac ggg agc gac cga gag gat cac cgg	1296
Ser Ser Cys Ser Ser Tyr Asp Gly Ser Asp Arg Glu Asp His Arg	
420 425 430	
aac gaa ttc cac tcc ccc att gga ctc acc aga cct tcg ccg gac gaa	1344
Asn Glu Phe His Ser Pro Ile Gly Leu Thr Arg Pro Ser Pro Asp Glu	
435 440 445	
agg gaa agt ccc tca gtc aag cgc atg cga ctt tct gaa gga tgg gca	1392
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Thr	
465	
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Tyr Glu Leu Ser Val Leu Cys Asp Cys Glu Ile Ala Leu Ile Phe	
35 40 45	
Asn His Ser Asn Lys Leu Phe Gln Tyr Ala Ser Thr Asp Met Asp Lys	
50 55 60	
Val Leu Leu Lys Tyr Thr Glu Tyr Asn Glu Pro His Glu Ser Arg Thr	
65 70 75 80	
Asn Ala Asp Ile Ile Glu Thr Leu Arg Lys Lys Gly Phe Asn Gly Cys	
85 90 95	
Asp Ser Pro Glu Pro Asp Gly Glu Asp Ser Leu Glu Gln Ser Pro Leu	

100	105	110
Leu Glu Asp Lys Tyr Arg Arg Ala Ser Glu Glu Leu Asp Gly Leu Phe		
115	120	125
Arg Arg Tyr Gly Ser Thr Val Pro Ala Pro Asn Phe Ala Met Pro Val		
130	135	140
Thr Val Pro Val Ser Asn Gln Ser Ser Leu Gln Phe Ser Asn Pro Ser		
145	150	155
Gly Ser Leu Val Thr Pro Ser Leu Val Thr Ser Ser Leu Thr Asp Pro		
165	170	175
Arg Leu Leu Ser Pro Gln Gln Pro Ala Leu Gln Arg Asn Ser Val Ser		
180	185	190
Pro Gly Leu Pro Gln Arg Pro Ala Ser Ala Gly Ala Met Leu Gly Gly		
195	200	205
Asp Leu Asn Ser Ala Asn Gly Ala Cys Pro Ser Pro Val Gly Asn Gly		
210	215	220
Tyr Val Ser Ala Arg Ala Ser Pro Gly Leu Leu Pro Val Ala Asn Gly		
225	230	235
Asn Ser Leu Asn Lys Val Ile Pro Ala Lys Ser Pro Pro Pro Thr		
245	250	255
His Ser Thr Gln Leu Gly Ala Pro Ser Arg Lys Pro Asp Leu Arg Val		
260	265	270
Ile Thr Ser Gln Ala Gly Lys Gly Leu Met His His Leu Thr Glu Asp		
275	280	285
His Leu Asp Leu Asn Asn Ala Gln Arg Leu Gly Val Ser Gln Ser Thr		
290	295	300
His Ser Leu Thr Thr Pro Val Val Ser Val Ala Thr Pro Ser Leu Leu		
305	310	315
Ser Gln Gly Leu Pro Phe Ser Ser Met Pro Thr Ala Tyr Asn Thr Asp		
325	330	335
Tyr Gln Leu Thr Ser Ala Glu Leu Ser Ser Leu Pro Ala Phe Ser Ser		
340	345	350
Pro Gly Gly Leu Ser Leu Gly Asn Val Thr Ala Trp Gln Gln Pro Gln		
355	360	365
Gln Pro Gln Gln Pro Gln Gln Pro Gln Pro Pro Gln Gln Gln Pro Pro		
370	375	380
Gln Pro Gln Gln Pro Gln Gln Pro Gln Gln Pro Gln Gln Pro		

385	390	395	400
Pro Gln Gln Gln Ser His Leu Val Pro Val Ser Leu Ser Asn Leu Ile			
405	410	415	
Pro Gly Ser Pro Leu Pro His Val Gly Ala Ala Leu Thr Val Thr Thr			
420	425	430	
His Pro His Ile Ser Ile Lys Ser Glu Pro Val Ser Pro Ser Arg Glu			
435	440	445	
Arg Ser Pro Ala Pro Pro Pro Ala Val Phe Pro Ala Ala Arg Pro			
450	455	460	
Glu Pro Gly Asp Gly Leu Ser Ser Pro Ala Gly Gly Ser Tyr Glu Thr			
465	470	475	480
Gly Asp Arg Asp Asp Gly Arg Gly Asp Phe Gly Pro Thr Leu Gly Leu			
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Leu Arg Pro Ala Pro Glu Pro Glu Ala Glu Gly Ser Ala Val Lys Arg			
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1	5	10	15
cga cag gtg act ttc acc aag cgg aag ttt ggc ctg atg aag aag gc <sup>g</sup>			96
Arg Gln Val Thr Phe Thr Lys Arg Lys Phe Gly Leu Met Lys Lys Ala			
20	25	30	
tat gag ctg agc gtg cta tgt gac tgc gag atc gca ctc atc atc ttc			144
Tyr Glu Leu Ser Val Leu Cys Asp Cys Glu Ile Ala Leu Ile Ile Phe			
35	40	45	
aac cac tcc aac aag ctg ttc cag tac gcc agc acc gac atg gac aag			192
Asn His Ser Asn Lys Leu Phe Gln Tyr Ala Ser Thr Asp Met Asp Lys			

50	55	60		
gtg	ctg	ctc	aag tac acg gag tac aat gag cca cac gag agc cgc acc	240
Val	Leu	Leu	Lys Tyr Thr Glu Tyr Asn Glu Pro His Glu Ser Arg Thr	
65	70	75	80	
aac	gcc	gac	atc atc gag acc ctg agg aag aag ggc ttc aat ggc tgc	288
Asn	Ala	Asp	Ile Ile Glu Thr Leu Arg Lys Lys Gly Phe Asn Gly Cys	
85	90	95		
gac	agc	ccc	gag ccc gac ggg gag gac tcg ctg gaa cag agc ccc ctg	336
Asp	Ser	Pro	Glu Pro Asp Gly Glu Asp Ser Leu Glu Gln Ser Pro Leu	
100	105	110		
ctg	gag	gac	aag tac cga cgc gcc agc gag gag ctc gac ggg ctc ttc	384
Leu	Glu	Asp	Lys Tyr Arg Arg Ala Ser Glu Glu Leu Asp Gly Leu Phe	
115	120	125		
cgg	cgc	tat	ggg tca act gtc ccg gcc ccc aac ttt gcc atg cct gtc	432
Arg	Arg	Tyr	Gly Ser Thr Val Pro Ala Pro Asn Phe Ala Met Pro Val	
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acg	gtg	ccc	gtg tcc aat cag agc tca ctg cag ttc agc aat ccc agc	480
Thr	Val	Pro	Val Ser Asn Gln Ser Ser Leu Gln Phe Ser Asn Pro Ser	
145	150	155	160	
ggc	tcc	ctg	gtc acc cct tcc ctg gtg aca tca tcc ctc acg gac ccg	528
Gly	Ser	Leu	Val Thr Pro Ser Leu Val Thr Ser Ser Leu Thr Asp Pro	
165	170	175		
cgg	ctc	ctg	tcc ccc cag cag cca gca cta cag agg aac agt gtg tct	576
Arg	Leu	Leu	Ser Pro Gln Gln Pro Ala Leu Gln Arg Asn Ser Val Ser	
180	185	190		
cct	ggc	ctg	ccc cag cgg cca gct agt gcg ggg gcc atg ctg ggg ggt	624
Pro	Gly	Leu	Pro Gln Arg Pro Ala Ser Ala Gly Ala Met Leu Gly Gly	
195	200	205		
gac	ctg	aac	agt gct aac gga gcc tgc ccc agc cct gtt ggg aat ggc	672
Asp	Leu	Asn	Ser Ala Asn Gly Ala Cys Pro Ser Pro Val Gly Asn Gly	
210	215	220		
tac	gtc	agt	gct cgg gct tcc cct ggc ctc ctc cct gtg gcc aat ggc	720
Tyr	Val	Ser	Ala Arg Ala Ser Pro Gly Leu Leu Pro Val Ala Asn Gly	
225	230	235	240	
aac	agc	cta	aac aag gtc atc cct gcc aag tct ccg ccc cca cct acc	768
Asn	Ser	Leu	Asn Lys Val Ile Pro Ala Lys Ser Pro Pro Pro Thr	

245	250	255	
cac agc acc cag ctt gga gcc ccc agc cgc aag ccc gac ctg cga gtc			816
His Ser Thr Gln Leu Gly Ala Pro Ser Arg Lys Pro Asp Leu Arg Val			
260	265	270	
atc act tcc cag gca gga aag ggg tta atg cat cac ttg act gag gac			864
Ile Thr Ser Gln Ala Gly Lys Gly Leu Met His His Leu Thr Glu Asp			
275	280	285	
cat tta gat ctg aac aat gcc cag cgc ctt ggg gtc tcc cag tct act			912
His Leu Asp Leu Asn Asn Ala Gln Arg Leu Gly Val Ser Gln Ser Thr			
290	295	300	
cat tcg ctc acc acc cca gtg gtt tct gtg gca acg ccg agt tta ctc			960
His Ser Leu Thr Thr Pro Val Val Ser Val Ala Thr Pro Ser Leu Leu			
305	310	315	320
agc cag ggc ctc ccc ttc tct tcc atg ccc act gcc tac aac aca gat			1008
Ser Gln Gly Leu Pro Phe Ser Ser Met Pro Thr Ala Tyr Asn Thr Asp			
325	330	335	
tac cag ttg acc agt gca gag ctc tcc tta cca gcc ttt agt tca			1056
Tyr Gln Leu Thr Ser Ala Glu Leu Ser Ser Leu Pro Ala Phe Ser Ser			
340	345	350	
cct ggg ggg ctg tcg cta ggc aat gtc act gcc tgg caa cag cca cag			1104
Pro Gly Gly Leu Ser Leu Gly Asn Val Thr Ala Trp Gln Gln Pro Gln			
355	360	365	
cag ccc cag cag ccg cag cag cca cag cct cca cag cag cca ccg			1152
Gln Pro Gln Gln Pro Gln Gln Pro Gln Pro Pro Gln Gln Gln Pro Pro			
370	375	380	
cag cca cag cag cca cag cag cct cag cag ccg caa cag cca			1200
Gln Pro Gln Pro			
385	390	395	400
cct cag caa cag tcc cac ctg gtc cct gta tct ctc agc aac ctc atc			1248
Pro Gln Gln Gln Ser His Leu Val Pro Val Ser Leu Ser Asn Leu Ile			
405	410	415	
ccg ggc agc ccc ctg ccc cac gtg ggt gct gcc ctc aca gtc acc acc			1296
Pro Gly Ser Pro Leu Pro His Val Gly Ala Ala Leu Thr Val Thr Thr			
420	425	430	
cac ccc cac atc agc atc aag tca gaa ccg gtg tcc cca agc cgt gag			1344
His Pro His Ile Ser Ile Lys Ser Glu Pro Val Ser Pro Ser Arg Glu			

435	440	445	
cgc agc cct gcg cct ccc cct cca gct gtg ttc cca gct gcc cgc cct			1392
Arg Ser Pro Ala Pro Pro Pro Ala Val Phe Pro Ala Ala Arg Pro			
450	455	460	
gag cct ggc gat ggt ctc agc agc cca gcc ggg gga tcc tat gag acg			1440
Glu Pro Gly Asp Gly Leu Ser Ser Pro Ala Gly Gly Ser Tyr Glu Thr			
465	470	475	480
gga gac cgg gat gac gga cgg ggg gac ttc ggg ccc aca ctg ggc ctg			1488
Gly Asp Arg Asp Asp Gly Arg Gly Asp Phe Gly Pro Thr Leu Gly Leu			
485	490	495	
ctg cgc cca gcc cca gag cct gag gct gag ggc tca gct gtg aag agg			1536
Leu Arg Pro Ala Pro Glu Pro Glu Ala Glu Gly Ser Ala Val Lys Arg			
500	505	510	
atg cgg ctt gat acc tgg aca tta aag			1563
Met Arg Leu Asp Thr Trp Thr Leu Lys			
515	520		
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20	25	30	
Ser Arg Cys Ser His Glu Glu Asn Pro Tyr Phe His Gly Trp Leu Ile			
35	40	45	
Gly His Pro Glu Met Ser Pro Pro Asp Tyr Ser Met Ala Leu Ser Tyr			
50	55	60	
Ser Pro Glu Tyr Ala Ser Gly Ala Ala Gly Leu Asp His Ser His Tyr			
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Gly Gly Val Pro Pro Gly Ala Gly Pro Pro Gly Leu Gly Gly Pro Arg			
85	90	95	
Pro Val Lys Arg Arg Gly Thr Ala Asn Arg Lys Glu Arg Arg Arg Thr			
100	105	110	
Gln Ser Ile Asn Ser Ala Phe Ala Glu Leu Arg Glu Cys Ile Pro Asn			

115	120	125	
Val Pro Ala Asp Thr Lys Leu Ser Lys Ile Lys Thr Leu Arg Leu Ala			
130	135	140	
Thr Ser Tyr Ile Ala Tyr Leu Met Asp Leu Leu Ala Lys Asp Asp Gln			
145	150	155	160
Asn Gly Glu Ala Glu Ala Phe Lys Ala Glu Ile Lys Lys Thr Asp Val			
165	170	175	
Lys Glu Glu Lys Arg Lys Glu Leu Asn Glu Ile Leu Lys Ser Thr			
180	185	190	
Val Ser Ser Asn Asp Lys Lys Thr Lys Gly Arg Thr Gly Trp Pro Gln			
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His Val Trp Ala Leu Glu Leu Lys Gln			
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Met Ser Leu Val Gly Gly Phe Pro His His Pro Val Val His His Glu			
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ggc tac ccg ttc gcc gca gca gcc gcc gct gct gct gcc gcc gcc			96
Gly Tyr Pro Phe Ala			
20	25	30	
agc cgc tgc agt cac gag gag aac ccc tat ttc cac ggc tgg ctt att			144
Ser Arg Cys Ser His Glu Glu Asn Pro Tyr Phe His Gly Trp Leu Ile			
35	40	45	
ggc cac ccg gag atg tcg ccc ccc gac tac agc atg gcc ctg tcc tac			192
Gly His Pro Glu Met Ser Pro Pro Asp Tyr Ser Met Ala Leu Ser Tyr			
50	55	60	
agt ccc gag tac gcc agc ggt gcc gcg ggc ctg gac cac tcc cat tat			240
Ser Pro Glu Tyr Ala Ser Gly Ala Ala Gly Leu Asp His Ser His Tyr			
65	70	75	80

ggg gga gtg ccg ccc ggt gcc ggg cct ccc ggc ctg ggg ggg ccg cgc	288
Gly Gly Val Pro Pro Gly Ala Gly Pro Pro Gly Leu Gly Gly Pro Arg	
85 90 95	
ccg gtg aag cgt cgg ggc acc gcc aac cgc aag gag cgg cgc agg act	336
Pro Val Lys Arg Arg Gly Thr Ala Asn Arg Lys Glu Arg Arg Arg Thr	
100 105 110	
cag agc atc aac agc gcc ttc gcc gag ctg cgc gag tgc atc ccc aac	384
Gln Ser Ile Asn Ser Ala Phe Ala Glu Leu Arg Glu Cys Ile Pro Asn	
115 120 125	
gtg ccc gcc gac acc aaa ctc tcc aaa atc aag act ctg cgc ctg gcc	432
Val Pro Ala Asp Thr Lys Leu Ser Lys Ile Lys Thr Leu Arg Leu Ala	
130 135 140	
acc agc tac atc gcc tac ctc atg gat ctg ctg gcc aag gac gac cag	480
Thr Ser Tyr Ile Ala Tyr Leu Met Asp Leu Leu Ala Lys Asp Asp Gln	
145 150 155 160	
aac gga gag gcg gag gcc ttc aag gcg gag atc aag aag acc gac gtg	528
Asn Gly Glu Ala Glu Ala Phe Lys Ala Glu Ile Lys Lys Thr Asp Val	
165 170 175	
aaa gag gag aag agg aag aaa gag ctg aat gaa atc ttg aaa agt aca	576
Lys Glu Glu Lys Arg Lys Glu Leu Asn Glu Ile Leu Lys Ser Thr	
180 185 190	
gtg agc agc aac gac aag aaa acc aaa ggc cgg aca ggc tgg cca cag	624
Val Ser Ser Asn Asp Lys Lys Thr Lys Gly Arg Thr Gly Trp Pro Gln	
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cac gtc tgg gcc ctg gag ctc aag cag	651
His Val Trp Ala Leu Glu Leu Lys Gln	
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His Pro Ala His Pro Met Leu His Glu Pro Phe Leu Phe Gly Pro Ala	
20 25 30	

Ser Arg Cys His Gln Glu Arg Pro Tyr Phe Gln Ser Trp Leu Leu Ser  
                  35                 40                 45  
 Pro Ala Asp Ala Ala Pro Asp Phe Pro Ala Gly Gly Pro Pro Pro Ala  
                  50                 55                 60  
 Ala Ala Ala Ala Ala Thr Ala Tyr Gly Pro Asp Ala Arg Pro Gly Gln  
                  65                 70                 75                 80  
 Ser Pro Gly Arg Leu Glu Ala Leu Gly Gly Arg Leu Gly Arg Arg Lys  
                  85                 90                 95  
 Gly Ser Gly Pro Lys Lys Glu Arg Arg Arg Thr Glu Ser Ile Asn Ser  
                  100                 105                 110  
 Ala Phe Ala Glu Leu Arg Glu Cys Ile Pro Asn Val Pro Ala Asp Thr  
                  115                 120                 125  
 Lys Leu Ser Lys Ile Lys Thr Leu Arg Leu Ala Thr Ser Tyr Ile Ala  
                  130                 135                 140  
 Tyr Leu Met Asp Val Leu Ala Lys Asp Ala Gln Ser Gly Asp Pro Glu  
                  145                 150                 155                 160  
 Ala Phe Lys Ala Glu Leu Lys Lys Ala Asp Gly Gly Arg Glu Ser Lys  
                  165                 170                 175  
 Arg Lys Arg Glu Leu Gln Gln His Glu Gly Phe Pro Pro Ala Leu Gly  
                  180                 185                 190  
 Pro Val Glu Lys Arg Ile Lys Gly Arg Thr Gly Trp Pro Gln Gln Val  
                  195                 200                 205  
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 cac cct gcg cac ccc atg ctc cac gaa ccc ttc ctc ttc ggt ccg gcc 96

His	Pro	Ala	His	Pro	Met	Leu	His	Glu	Pro	Phe	Leu	Phe	Gly	Pro	Ala			
					20				25				30					
tcg	cgc	tgt	cat	cag	gaa	agg	ccc	tac	ttc	cag	agc	tgg	ctg	ctg	agc	144		
Ser	Arg	Cys	His	Gln	Glu	Arg	Pro	Tyr	Phe	Gln	Ser	Trp	Leu	Leu	Ser			
					35				40				45					
ccg	gct	gac	gct	gcc	ccg	gac	ttc	cct	gct	ggc	ggc	ggg	ccg	ccc	gct	192		
Pro	Ala	Asp	Ala	Ala	Pro	Asp	Phe	Pro	Ala	Gly	Gly	Pro	Pro	Pro	Ala			
					50				55			60						
gcc	gct	gca	gcc	gcc	acc	gcc	tat	ggt	cct	gac	gcc	agg	cct	ggg	cag	240		
Ala	Tyr	Gly	Pro	Asp	Ala	Arg	Pro	Gly	Gln									
					65				70			75			80			
agc	ccc	ggg	cgg	ctg	gag	gct	ttt	ggc	ggc	cgt	ctt	ggc	cgg	cgg	aaa	288		
Ser	Pro	Gly	Arg	Leu	Glu	Ala	Leu	Gly	Gly	Arg	Leu	Gly	Arg	Arg	Lys			
					85				90			95						
ggc	tca	gga	ccc	aag	aag	gag	cgg	aga	cgc	act	gag	agc	att	aac	agc	336		
Gly	Ser	Gly	Pro	Lys	Lys	Glu	Arg	Arg	Arg	Arg	Thr	Glu	Ser	Ile	Asn	Ser		
					100				105			110						
gca	ttc	gct	gag	ttg	cgc	gag	tgc	atc	ccc	aac	gtg	ccg	gcc	gac	acc	384		
Ala	Phe	Ala	Glu	Leu	Arg	Glu	Cys	Ile	Pro	Asn	Val	Pro	Ala	Asp	Thr			
					115				120			125						
aag	ctc	tcc	aag	atc	aag	act	ctg	cgc	cta	gcc	acc	agc	tac	atc	gcc	432		
Lys	Leu	Ser	Lys	Ile	Lys	Thr	Leu	Arg	Leu	Ala	Thr	Ser	Tyr	Ile	Ala			
					130				135			140						
tac	ctg	atg	gac	gtg	ctg	gcc	aag	gat	gca	cag	tct	ggc	gat	ccc	gag	480		
Tyr	Leu	Met	Asp	Val	Leu	Ala	Lys	Asp	Ala	Gln	Ser	Gly	Asp	Pro	Glu			
					145				150			155			160			
gcc	ttc	aag	gct	gaa	ctc	aag	aag	gct	gat	ggc	ggc	cgt	gag	agc	aag	528		
Ala	Phe	Lys	Ala	Glu	Leu	Lys	Lys	Ala	Asp	Gly	Gly	Arg	Glu	Ser	Lys			
					165				170			175						
cgg	aaa	agg	gag	ctg	cag	cag	cac	gaa	ggt	ttt	cct	cct	gcc	ctg	ggc	576		
Arg	Lys	Arg	Glu	Leu	Gln	Gln	His	Glu	Gly	Phe	Pro	Pro	Ala	Leu	Gly			
					180				185			190						
cca	gtc	gag	aag	agg	att	aaa	gga	cgc	acc	ggc	tgg	ccg	cag	caa	gtc	624		
Pro	Val	Glu	Lys	Arg	Ile	Lys	Gly	Arg	Thr	Gly	Trp	Pro	Gln	Gln	Val			
					195				200			205						
tgg	gct	ctg	gag	tta	aac	cag										645		

Trp Ala Leu Glu Leu Asn Gln  
210 215  
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<211> 411  
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Glu Gly Val Trp Ser Pro Asp Ile Glu Gln Ser Phe Gln Glu Ala Leu  
20 25 30  
Ala Ile Tyr Pro Pro Cys Gly Arg Arg Lys Ile Ile Leu Ser Asp Glu  
35 40 45  
Gly Lys Met Tyr Gly Arg Asn Glu Leu Ile Ala Arg Tyr Ile Lys Leu  
50 55 60  
Arg Thr Gly Lys Thr Arg Thr Arg Lys Gln Val Ser Ser His Ile Gln  
65 70 75 80  
Val Leu Ala Arg Arg Lys Ser Arg Asp Phe His Ser Lys Leu Lys Asp  
85 90 95  
Gln Thr Ala Lys Asp Lys Ala Leu Gln His Met Ala Ala Met Ser Ser  
100 105 110  
Ala Gln Ile Val Ser Ala Thr Ala Ile His Asn Lys Leu Gly Leu Pro  
115 120 125  
Gly Ile Pro Arg Pro Thr Phe Pro Gly Ala Pro Gly Phe Trp Pro Gly  
130 135 140  
Met Ile Gln Thr Gly Gln Pro Gly Ser Ser Gln Asp Val Lys Pro Phe  
145 150 155 160  
Val Gln Gln Ala Tyr Pro Ile Gln Pro Ala Val Thr Ala Pro Ile Pro  
165 170 175  
Gly Phe Glu Pro Ala Ser Ala Pro Ala Pro Ser Val Pro Ala Trp Gln  
180 185 190  
Gly Arg Ser Ile Gly Thr Thr Lys Leu Arg Leu Val Glu Phe Ser Ala  
195 200 205  
Phe Leu Glu Gln Gln Arg Asp Pro Asp Ser Tyr Asn Lys His Leu Phe  
210 215 220  
Val His Ile Gly His Ala Asn His Ser Tyr Ser Asp Pro Leu Leu Glu

225	230	235	240
Ser Val Asp Ile Arg Gln Ile Tyr Asp Lys Phe Pro Glu Lys Lys Gly			
245	250	255	
Gly Leu Lys Glu Leu Phe Gly Lys Gly Pro Gln Asn Ala Phe Phe Leu			
260	265	270	
Val Lys Phe Trp Ala Asp Leu Asn Cys Asn Ile Gln Asp Asp Ala Gly			
275	280	285	
Ala Phe Tyr Gly Val Thr Ser Gln Tyr Glu Ser Ser Glu Asn Met Thr			
290	295	300	
Val Thr Cys Ser Thr Lys Val Cys Ser Phe Gly Lys Gln Val Val Glu			
305	310	315	320
Lys Val Glu Thr Glu Tyr Ala Arg Phe Glu Asn Gly Arg Phe Val Tyr			
325	330	335	
Arg Ile Asn Arg Ser Pro Met Cys Glu Tyr Met Ile Asn Phe Ile His			
340	345	350	
Lys Leu Lys His Leu Pro Glu Lys Tyr Met Met Asn Ser Val Leu Glu			
355	360	365	
Asn Phe Thr Ile Leu Leu Val Val Thr Asn Arg Asp Thr Gln Glu Thr			
370	375	380	
Leu Leu Cys Met Ala Cys Val Phe Glu Val Ser Asn Ser Glu His Gly			
385	390	395	400
Ala Gln His His Ile Tyr Arg Leu Val Lys Asp			
405	410		

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<211> 1233

<212> DNA

<213> Homo sapiens

<220>

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<223> (1)..(1236)

<400> 26

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1	5													15		

gaa	ggg	gtc	tgg	agc	ccc	gac	atc	gag	caa	agc	ttt	cag	gag	gcc	ctg	96
Glu	Gly	Val	Trp	Ser	Pro	Asp	Ile	Glu	Gln	Ser	Phe	Gln	Glu	Ala	Leu	

20	25	30	
gct atc tat cca cca tgt ggg agg agg aaa atc atc tta tca gac gaa			144
Ala Ile Tyr Pro Pro Cys Gly Arg Arg Lys Ile Ile Leu Ser Asp Glu			
35	40	45	
ggc aaa atg tat ggt agg aat gaa ttg ata gcc aga tac atc aaa ctc			192
Gly Lys Met Tyr Gly Arg Asn Glu Leu Ile Ala Arg Tyr Ile Lys Leu			
50	55	60	
agg aca ggc aag acg agg acc aga aaa cag gtg tct agt cac att cag			240
Arg Thr Gly Lys Thr Arg Thr Arg Lys Gln Val Ser Ser His Ile Gln			
65	70	75	80
gtt ctt gcc aga agg aaa tct cgt gat ttt cat tcc aag cta aag gat			288
Val Leu Ala Arg Arg Lys Ser Arg Asp Phe His Ser Lys Leu Lys Asp			
85	90	95	
cag act gca aag gat aag gcc ctg cag cac atg gcg gcc atg tcc tca			336
Gln Thr Ala Lys Asp Lys Ala Leu Gln His Met Ala Ala Met Ser Ser			
100	105	110	
gcc cag atc gtc tcg gcc act gcc att cat aac aag ctg ggg ctg cct			384
Ala Gln Ile Val Ser Ala Thr Ala Ile His Asn Lys Leu Gly Leu Pro			
115	120	125	
ggg att cca cgc ccg acc ttc cca ggg gcg ccg ggg ttc tgg ccg gga			432
Gly Ile Pro Arg Pro Thr Phe Pro Gly Ala Pro Gly Phe Trp Pro Gly			
130	135	140	
atg att caa aca ggg cag cca gga tcc tca caa gac gtc aag cct ttt			480
Met Ile Gln Thr Gly Gln Pro Gly Ser Ser Gln Asp Val Lys Pro Phe			
145	150	155	160
gtg cag cag gcc tac ccc atc cag cca gcg gtc aca gcc ccc att cca			528
Val Gln Gln Ala Tyr Pro Ile Gln Pro Ala Val Thr Ala Pro Ile Pro			
165	170	175	
ggg ttt gag cct gca tcg gcc cca gct ccc tca gtc cct gcc tgg caa			576
Gly Phe Glu Pro Ala Ser Ala Pro Ala Pro Ser Val Pro Ala Trp Gln			
180	185	190	
ggt cgc tcc att ggc aca acc aag ctt cgc ctg gtg gaa ttt tca gct			624
Gly Arg Ser Ile Gly Thr Thr Lys Leu Arg Leu Val Glu Phe Ser Ala			
195	200	205	
ttt ctc gag cag cga gac cca gac tcg tac aac aaa cac ctc ttc			672
Phe Leu Glu Gln Gln Arg Asp Pro Asp Ser Tyr Asn Lys His Leu Phe			

210	215	220	
gtg cac att ggg cat gcc aac cat tct tac agt gac cca ttg ctt gaa			720
Val His Ile Gly His Ala Asn His Ser Tyr Ser Asp Pro Leu Leu Glu			
225	230	235	240
tca gtg gac att cgt cag att tat gac aaa ttt cct gaa aag aaa ggt			768
Ser Val Asp Ile Arg Gln Ile Tyr Asp Lys Phe Pro Glu Lys Lys Gly			
245	250	255	
ggc tta aag gaa ctg ttt gga aag ggc cct caa aat gcc ttc ttc ctc			816
Gly Leu Lys Glu Leu Phe Gly Lys Gly Pro Gln Asn Ala Phe Phe Leu			
260	265	270	
gta aaa ttc tgg gct gat tta aac tgc aat att caa gat gat gct ggg			864
Val Lys Phe Trp Ala Asp Leu Asn Cys Asn Ile Gln Asp Asp Ala Gly			
275	280	285	
gct ttt tat ggt gta acc agt cag tac gag agt tct gaa aat atg aca			912
Ala Phe Tyr Gly Val Thr Ser Gln Tyr Glu Ser Ser Glu Asn Met Thr			
290	295	300	
gtc acc tgt tcc acc aaa gtt tgc tcc ttt ggg aag caa gta gta gaa			960
Val Thr Cys Ser Thr Lys Val Cys Ser Phe Gly Lys Gln Val Val Glu			
305	310	315	320
aaa gta gag acg gag tat gca agg ttt gag aat ggc cga ttt gta tac			1008
Lys Val Glu Thr Glu Tyr Ala Arg Phe Glu Asn Gly Arg Phe Val Tyr			
325	330	335	
cga ata aac cgc tcc cca atg tgt gaa tat atg atc aac ttc atc cac			1056
Arg Ile Asn Arg Ser Pro Met Cys Glu Tyr Met Ile Asn Phe Ile His			
340	345	350	
aag ctc aaa cac tta cca gag aaa tat atg atg aac agt gtt ttg gaa			1104
Lys Leu Lys His Leu Pro Glu Lys Tyr Met Met Asn Ser Val Leu Glu			
355	360	365	
aac ttc aca att tta ttg gtg gta aca aac agg gat aca caa gaa act			1152
Asn Phe Thr Ile Leu Leu Val Val Thr Asn Arg Asp Thr Gln Glu Thr			
370	375	380	
cta ctc tgc atg gcc tgt gtg ttt gaa gtt tca aat agt gaa cac gga			1200
Leu Leu Cys Met Ala Cys Val Phe Glu Val Ser Asn Ser Glu His Gly			
385	390	395	400
gca caa cat cat att tac agg ctt gta aag gac			1233
Ala Gln His His Ile Tyr Arg Leu Val Lys Asp			

405

410

&lt;210&gt; 27

&lt;211&gt; 427

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 27

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															30
Glu	Gly	Val	Trp	Ser	Pro	Asp	Ile	Glu	Gln	Ser	Phe	Gln	Glu	Ala	Leu
															45
Ala	Ile	Tyr	Pro	Pro	Cys	Gly	Arg	Arg	Lys	Ile	Ile	Leu	Ser	Asp	Glu
															60
Gly	Lys	Met	Tyr	Gly	Arg	Asn	Glu	Leu	Ile	Ala	Arg	Tyr	Ile	Lys	Leu
															80
Arg	Thr	Gly	Lys	Thr	Arg	Thr	Arg	Lys	Gln	Val	Ser	Ser	His	Ile	Gln
															95
Val	Leu	Ala	Arg	Arg	Lys	Ala	Arg	Glu	Ile	Gln	Ala	Lys	Leu	Lys	Asp
															110
Gln	Ala	Ala	Lys	Asp	Lys	Ala	Leu	Gln	Ser	Met	Ala	Ala	Met	Ser	Ser
															125
Ala	Gln	Ile	Ile	Ser	Ala	Thr	Ala	Phe	His	Ser	Ser	Met	Ala	Leu	Ala
															140
Arg	Gly	Pro	Gly	Arg	Pro	Ala	Val	Ser	Gly	Phe	Trp	Gln	Gly	Ala	Leu
															160
Pro	Gly	Gln	Ala	Gly	Thr	Ser	His	Asp	Val	Lys	Pro	Phe	Ser	Gln	Gln
															175
Thr	Tyr	Ala	Val	Gln	Pro	Pro	Leu	Pro	Leu	Pro	Gly	Phe	Glu	Ser	Pro
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Ala	Gly	Pro	Ala	Pro	Ser	Pro	Ser	Ala	Pro	Pro	Ala	Pro	Pro	Trp	Gln
															205
Gly	Arg	Ser	Val	Ala	Ser	Ser	Lys	Leu	Trp	Met	Leu	Glu	Phe	Ser	Ala
															220
Phe	Leu	Glu	Gln	Gln	Gln	Asp	Pro	Asp	Thr	Tyr	Asn	Lys	His	Leu	Phe
															240
225															
230															

Val His Ile Gly Gln Ser Ser Pro Ser Tyr Ser Asp Pro Tyr Leu Glu  
                  245                 250                 255  
 Ala Val Asp Ile Arg Gln Ile Tyr Asp Lys Phe Pro Glu Lys Lys Gly  
                  260                 265                 270  
 Gly Leu Lys Asp Leu Phe Glu Arg Gly Pro Ser Asn Ala Phe Phe Leu  
                  275                 280                 285  
 Val Lys Phe Trp Ala Asp Leu Asn Thr Asn Ile Glu Asp Glu Gly Ser  
                  290                 295                 300  
 Ser Phe Tyr Gly Val Ser Ser Gln Tyr Glu Ser Pro Glu Asn Met Ile  
                  305                 310                 315                 320  
 Ile Thr Cys Ser Thr Lys Val Cys Ser Phe Gly Lys Gln Val Val Glu  
                  325                 330                 335  
 Lys Val Glu Thr Glu Tyr Ala Arg Tyr Glu Asn Gly His Tyr Ser Tyr  
                  340                 345                 350  
 Arg Ile His Arg Ser Pro Leu Cys Glu Tyr Met Ile Asn Phe Ile His  
                  355                 360                 365  
 Lys Leu Lys His Leu Pro Glu Lys Tyr Met Met Asn Ser Val Leu Glu  
                  370                 375                 380  
 Asn Phe Thr Ile Leu Gln Val Val Thr Asn Arg Asp Thr Gln Glu Thr  
                  385                 390                 395                 400  
 Leu Leu Cys Ile Ala Tyr Val Phe Glu Val Ser Ala Ser Glu His Gly  
                  405                 410                 415  
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                  1                 5                 10                 15  
 gcc tct ggg ggc agt cag gca ctg gac aag ccc atc gac aat gac gca 96

Ala Ser Gly Gly Ser Gln Ala Leu Asp Lys Pro Ile Asp Asn Asp Ala			
20	25	30	
gag ggc gtg tgg agc ccg gat att gag cag agt ttc cag gag gcc ctc			144
Glu Gly Val Trp Ser Pro Asp Ile Glu Gln Ser Phe Gln Glu Ala Leu			
35	40	45	
gcc atc tac ccg ccc tgt ggc agg cgc aaa atc atc ctg tcg gac gag			192
Ala Ile Tyr Pro Pro Cys Gly Arg Arg Lys Ile Ile Leu Ser Asp Glu			
50	55	60	
ggc aag atg tat ggt cgg aac gag ctg att gcc cgc tac atc aag ctc			240
Gly Lys Met Tyr Gly Arg Asn Glu Leu Ile Ala Arg Tyr Ile Lys Leu			
65	70	75	80
cgg aca ggg aag acc cgc acc agg aag cag gtc tcc agc cac atc cag			288
Arg Thr Gly Thr Arg Thr Arg Lys Gln Val Ser Ser His Ile Gln			
85	90	95	
gtg ctg gct cgt cgc aaa gct cgc gag atc cag gcc aag cta aag gac			336
Val Leu Ala Arg Arg Lys Ala Arg Glu Ile Gln Ala Lys Leu Lys Asp			
100	105	110	
cag gca gct aag gac aag gcc ctg cag agc atg gct gcc atg tcg tct			384
Gln Ala Ala Lys Asp Lys Ala Leu Gln Ser Met Ala Ala Met Ser Ser			
115	120	125	
gca cag atc atc tcc gcc acg gcc ttc cac agt agc atg gcc ctc gcc			432
Ala Gln Ile Ile Ser Ala Thr Ala Phe His Ser Ser Met Ala Leu Ala			
130	135	140	
cgg ggc ccc ggc cgc cca gca gtc tca ggg ttt tgg caa gga gct ttg			480
Arg Gly Pro Gly Arg Pro Ala Val Ser Gly Phe Trp Gln Gly Ala Leu			
145	150	155	160
cca ggc caa gcc gga acg tcc cat gat gtg aag cct ttc tct cag caa			528
Pro Gly Gln Ala Gly Thr Ser His Asp Val Lys Pro Phe Ser Gln Gln			
165	170	175	
acc tat gct gtc cag cct ccg ctg cct ctg cca ggg ttt gag tct cct			576
Thr Tyr Ala Val Gln Pro Pro Leu Pro Leu Pro Gly Phe Glu Ser Pro			
180	185	190	
gca ggg ccc gcc cca tcg ccc tct gcg ccc ccg gca ccc cca tgg cag			624
Ala Gly Pro Ala Pro Ser Pro Ser Ala Pro Pro Ala Pro Pro Trp Gln			
195	200	205	
ggc cgc agc gtg gcc agc tcc aag ctc tgg atg ttg gag ttc tct gcc			672

Gly Arg Ser Val Ala Ser Ser Lys Leu Trp Met Leu Glu Phe Ser Ala			
210	215	220	
ttc ctg gag cag cag cag gac ccg gac acg tac aac aag cac ctg ttc			720
Phe Leu Glu Gln Gln Asp Pro Asp Thr Tyr Asn Lys His Leu Phe			
225	230	235	240
gtg cac att ggc cag tcc agc cca agc tac agc gac ccc tac ctc gaa			768
Val His Ile Gly Gln Ser Ser Pro Ser Tyr Ser Asp Pro Tyr Leu Glu			
245	250	255	
gcc gtg gac atc cgc caa atc tat gac aaa ttc ccg gag aaa aag ggt			816
Ala Val Asp Ile Arg Gln Ile Tyr Asp Lys Phe Pro Glu Lys Lys Gly			
260	265	270	
gga ctc aag gat ctc ttc gaa cgg gga ccc tcc aat gcc ttt ttt ctt			864
Gly Leu Lys Asp Leu Phe Glu Arg Gly Pro Ser Asn Ala Phe Phe Leu			
275	280	285	
gtg aag ttc tgg gca gac ctc aac acc aac atc gag gat gaa ggc agc			912
Val Lys Phe Trp Ala Asp Leu Asn Thr Asn Ile Glu Asp Glu Gly Ser			
290	295	300	
tcc ttc tat ggg gtc tcc agc cag tat gag agc ccc gag aac atg atc			960
Ser Phe Tyr Gly Val Ser Ser Gln Tyr Glu Ser Pro Glu Asn Met Ile			
305	310	315	320
atc acc tgc tcc acg aag gtc tgc tct ttc ggc aag cag gtg gtg gag			1008
Ile Thr Cys Ser Thr Lys Val Cys Ser Phe Gly Lys Gln Val Val Glu			
325	330	335	
aaa gtt gag aca gag tat gct cgc tat gag aat gga cac tac tct tac			1056
Lys Val Glu Thr Glu Tyr Ala Arg Tyr Glu Asn Gly His Tyr Ser Tyr			
340	345	350	
cgc atc cac cgg tcc ccg ctc tgt gag tac atg atc aac ttc atc cac			1104
Arg Ile His Arg Ser Pro Leu Cys Glu Tyr Met Ile Asn Phe Ile His			
355	360	365	
aag ctc aag cac ctc cct gag aag tac atg atg aac agc gtg ctg gag			1152
Lys Leu Lys His Leu Pro Glu Lys Tyr Met Met Asn Ser Val Leu Glu			
370	375	380	
aac ttc acc atc ctg cag gtg gtc acc aac aga gac aca cag gag acc			1200
Asn Phe Thr Ile Leu Gln Val Val Thr Asn Arg Asp Thr Gln Glu Thr			
385	390	395	400
ttg ctg tgc att gcc tat gtc ttt gag gtg tca gcc agt gag cac ggg			1248

Leu	Leu	Cys	Ile	Ala	Tyr	Val	Phe	Glu	Val	Ser	Ala	Ser	Glu	His	Gly			
														405	410	415		
gct	cag	cac	cac	atc	tac	agg	ctg	gtg	aaa	gaa						1281		
Ala	Gln	His	His	Ile	Tyr	Arg	Leu	Val	Lys	Glu								
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Glu	Asp	Gly	Pro	Glu	Gly	Leu	Asp	Lys	Gly	Leu	Asp	Asn	Asp	Ala	Glu			
																20	25	30
Gly	Val	Trp	Ser	Pro	Asp	Ile	Glu	Gln	Ser	Phe	Gln	Glu	Ala	Leu	Ala			
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Ile	Tyr	Pro	Pro	Cys	Gly	Arg	Arg	Lys	Ile	Ile	Leu	Ser	Asp	Glu	Gly			
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Lys	Met	Tyr	Gly	Arg	Asn	Glu	Leu	Ile	Ala	Arg	Tyr	Ile	Lys	Leu	Arg			
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Thr	Gly	Lys	Thr	Arg	Thr	Arg	Lys	Gln	Val	Ser	Ser	His	Ile	Gln	Val			
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Leu	Ala	Arg	Lys	Lys	Val	Arg	Glu	Tyr	Gln	Val	Gly	Ile	Lys	Ala	Met			
																100	105	110
Asn	Leu	Asp	Gln	Val	Ser	Lys	Asp	Lys	Ala	Leu	Gln	Ser	Met	Ala	Ser			
																115	120	125
Met	Ser	Ser	Ala	Gln	Ile	Val	Ser	Ala	Ser	Val	Leu	Gln	Asn	Lys	Phe			
																130	135	140
Ser	Pro	Pro	Ser	Pro	Leu	Pro	Gln	Ala	Val	Phe	Ser	Thr	Ser	Ser	Arg			
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Phe	Trp	Ser	Ser	Pro	Pro	Leu	Leu	Gly	Gln	Gln	Pro	Gly	Pro	Ser	Gln			
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Asp	Ile	Lys	Pro	Phe	Ala	Gln	Pro	Ala	Tyr	Pro	Ile	Gln	Pro	Pro	Leu			
																180	185	190
Pro	Pro	Thr	Leu	Ser	Ser	Tyr	Glu	Pro	Leu	Ala	Pro	Leu	Pro	Ser	Ala			
																195	200	205

Ala Ala Ser Val Pro Val Trp Gln Asp Arg Thr Ile Ala Ser Ser Arg  
210 215 220  
Leu Arg Leu Leu Glu Tyr Ser Ala Phe Met Glu Val Gln Arg Asp Pro  
225 230 235 240  
Asp Thr Tyr Ser Lys His Leu Phe Val His Ile Gly Gln Thr Asn Pro  
245 250 255  
Ala Phe Ser Asp Pro Pro Leu Glu Ala Val Asp Val Arg Gln Ile Tyr  
260 265 270  
Asp Lys Phe Pro Glu Lys Lys Gly Gly Leu Lys Glu Leu Tyr Glu Lys  
275 280 285  
Gly Pro Pro Asn Ala Phe Phe Leu Val Lys Phe Trp Ala Asp Leu Asn  
290 295 300  
Ser Thr Ile Gln Glu Gly Pro Gly Ala Phe Tyr Gly Val Ser Ser Gln  
305 310 315 320  
Tyr Ser Ser Ala Asp Ser Met Thr Ile Ser Val Ser Thr Lys Val Cys  
325 330 335  
Ser Phe Gly Lys Gln Val Val Glu Lys Val Glu Thr Glu Tyr Ala Arg  
340 345 350  
Leu Glu Asn Gly Arg Phe Val Tyr Arg Ile His Arg Ser Pro Met Cys  
355 360 365  
Glu Tyr Met Ile Asn Phe Ile His Lys Leu Lys His Leu Pro Glu Lys  
370 375 380  
Tyr Met Met Asn Ser Val Leu Glu Asn Phe Thr Ile Leu Gln Val Val  
385 390 395 400  
Thr Ser Arg Asp Ser Gln Glu Thr Leu Leu Val Ile Ala Phe Val Phe  
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1															15	
gag	gat	ggg	ccc	gag	ggc	ctg	gac	aag	ggg	ctg	gac	aac	gat	gcg	gag	96
Glu	Asp	Gly	Pro	Glu	Gly	Leu	Asp	Lys	Gly	Leu	Asp	Asn	Asp	Ala	Glu	
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ggc	gtg	tgg	agc	ccg	gac	atc	gag	cag	agc	ttc	cag	gag	gcc	ctg	gcc	144
Gly	Val	Trp	Ser	Pro	Asp	Ile	Glu	Gln	Ser	Phe	Gln	Glu	Ala	Leu	Ala	
35															45	
atc	tac	ccg	ccc	tgc	ggc	cg	gg	aag	atc	atc	ctg	tca	gac	gag	ggc	192
Ile	Tyr	Pro	Pro	Cys	Gly	Arg	Arg	Lys	Ile	Ile	Leu	Ser	Asp	Glu	Gly	
50															60	
aag	atg	tac	ggc	cga	aat	gag	ttg	att	gca	cgc	tat	att	aaa	ctg	agg	240
Lys	Met	Tyr	Gly	Arg	Asn	Glu	Leu	Ile	Ala	Arg	Tyr	Ile	Lys	Leu	Arg	
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acg	ggg	aag	act	cg	acg	aga	aaa	cag	gtg	tcc	agc	cac	ata	cag	gtt	288
Thr	Gly	Lys	Thr	Arg	Thr	Arg	Lys	Gln	Val	Ser	Ser	His	Ile	Gln	Val	
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cta	gct	cgg	aag	aag	gtg	cg	gag	tac	cag	gtt	ggc	atc	aag	gcc	atg	336
Leu	Ala	Arg	Lys	Lys	Val	Arg	Glu	Tyr	Gln	Val	Gly	Ile	Lys	Ala	Met	
100															110	
aac	ctg	gac	cag	gtc	tcc	aag	gac	aaa	gcc	ctt	cag	agc	atg	gcg	tcc	384
Asn	Leu	Asp	Gln	Val	Ser	Lys	Asp	Lys	Ala	Leu	Gln	Ser	Met	Ala	Ser	
115															125	
atg	tcc	tct	gcc	cag	atc	gtc	tct	gcc	agt	gtc	ctg	cag	aac	aag	ttc	432
Met	Ser	Ser	Ala	Gln	Ile	Val	Ser	Ala	Ser	Val	Leu	Gln	Asn	Lys	Phe	
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agc	cca	cct	tcc	cct	ctg	ccc	cag	gcc	gtc	ttc	tcc	act	tcc	tcg	cg	480
Ser	Pro	Pro	Ser	Pro	Leu	Pro	Gln	Ala	Val	Phe	Ser	Thr	Ser	Ser	Arg	
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ttc	tgg	agc	agc	ccc	cct	ctc	ctg	gga	cag	cag	cct	gga	ccc	tct	cag	528
Phe	Trp	Ser	Ser	Pro	Pro	Leu	Leu	Gly	Gln	Gln	Pro	Gly	Pro	Ser	Gln	
165															175	
gac	atc	aag	ccc	ttt	gca	cag	cca	gcc	tac	ccc	atc	cag	ccg	ccc	ctg	576
Asp	Ile	Lys	Pro	Phe	Ala	Gln	Pro	Ala	Tyr	Pro	Ile	Gln	Pro	Pro	Leu	

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Pro Pro Thr Leu Ser Ser Tyr Glu Pro Leu Ala Pro Leu Pro Ser Ala			
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gct gcc tct gtg cct gtg tgg cag gac cgt acc att gcc tcc tcc cgg			672
Ala Ala Ser Val Pro Val Trp Gln Asp Arg Thr Ile Ala Ser Ser Arg			
210	215	220	
ctg cgg ctc ctg gag tat tca gcc ttc atg gag gtg cag cga gac cct			720
Leu Arg Leu Leu Glu Tyr Ser Ala Phe Met Glu Val Gln Arg Asp Pro			
225	230	235	240
gac acg tac agc aaa cac ctg ttt gtg cac atc ggc cag acg aac ccc			768
Asp Thr Tyr Ser Lys His Leu Phe Val His Ile Gly Gln Thr Asn Pro			
245	250	255	
gcc ttc tca gac cca ccc ctg gag gca gta gat gtg cgc cag atc tat			816
Ala Phe Ser Asp Pro Pro Leu Glu Ala Val Asp Val Arg Gln Ile Tyr			
260	265	270	
gac aaa ttc ccc gag aaa aag gga gga ttg aag gag ctc tat gag aag			864
Asp Lys Phe Pro Glu Lys Lys Gly Gly Leu Lys Glu Leu Tyr Glu Lys			
275	280	285	
ggg ccc cct aat gcc ttc ttc ctt gtc aag ttc tgg gcc gac ctc aac			912
Gly Pro Pro Asn Ala Phe Phe Leu Val Lys Phe Trp Ala Asp Leu Asn			
290	295	300	
agc acc atc cag gag ggc ccg gga gcc ttc tat ggg gtc agc tct cag			960
Ser Thr Ile Gln Glu Gly Pro Gly Ala Phe Tyr Gly Val Ser Ser Gln			
305	310	315	320
tac agc tct gct gat agc atg acc atc agc gtc tcc acc aag gtg tgc			1008
Tyr Ser Ser Ala Asp Ser Met Thr Ile Ser Val Ser Thr Lys Val Cys			
325	330	335	
tcc ttt ggc aaa cag gtg gta gag aag gtg gag act gag tat gcc agg			1056
Ser Phe Gly Lys Gln Val Val Glu Lys Val Glu Thr Glu Tyr Ala Arg			
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Leu Glu Asn Gly Arg Phe Val Tyr Arg Ile His Arg Ser Pro Met Cys			
355	360	365	
gag tac atg atc aac ttc atc cac aag ctg aag cac ctg ccc gag aag			1152
Glu Tyr Met Ile Asn Phe Ile His Lys Leu Lys His Leu Pro Glu Lys			

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Thr Ser Arg Asp Ser Gln Glu Thr Leu Leu Val Ile Ala Phe Val Phe			
405	410	415	
gaa gtc tcc acc agt gag cac ggg gcc cag cac cat gtc tac aag ctc			
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Pro Gln Gly Trp Arg Leu Val Gln Arg Gly Asp Pro Ala Ala Phe Arg			
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Ala Leu Val Ala Gln Cys Leu Val Cys Val Pro Trp Asp Ala Arg Pro			
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Pro Pro Ala Ala Pro Ser Phe Arg Gln Val Ser Cys Leu Lys Glu Leu			
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Val Ala Arg Val Leu Gln Arg Leu Cys Glu Arg Gly Ala Lys Asn Val			
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Leu Ala Phe Gly Phe Ala Leu Leu Asp Gly Ala Arg Gly Gly Pro Pro			
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Glu Ala Phe Thr Thr Ser Val Arg Ser Tyr Leu Pro Asn Thr Val Thr			
115	120	125	
Asp Ala Leu Arg Gly Ser Gly Ala Trp Gly Leu Leu Leu Arg Arg Val			
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Gly Asp Asp Val Leu Val His Leu Leu Ala Arg Cys Ala Leu Phe Val  
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Leu Val Ala Pro Ser Cys Ala Tyr Gln Val Cys Gly Pro Pro Leu Tyr  
165 170 175  
Gln Leu Gly Ala Ala Thr Gln Ala Arg Pro Pro Pro His Ala Ser Gly  
180 185 190  
Pro Arg Arg Arg Leu Gly Cys Glu Arg Ala Trp Asn His Ser Val Arg  
195 200 205  
Glu Ala Gly Val Pro Leu Gly Leu Pro Ala Pro Gly Ala Arg Arg Arg  
210 215 220  
Gly Gly Ser Ala Ser Arg Ser Leu Pro Leu Pro Lys Arg Pro Arg Arg  
225 230 235 240  
Gly Ala Ala Pro Glu Pro Glu Arg Thr Pro Val Gly Gln Gly Ser Trp  
245 250 255  
Ala His Pro Gly Arg Thr Arg Gly Pro Ser Asp Arg Gly Phe Cys Val  
260 265 270  
Val Ser Pro Ala Arg Pro Ala Glu Glu Ala Thr Ser Leu Glu Gly Ala  
275 280 285  
Leu Ser Gly Thr Arg His Ser His Pro Ser Val Gly Arg Gln His His  
290 295 300  
Ala Gly Pro Pro Ser Thr Ser Arg Pro Pro Arg Pro Trp Asp Thr Pro  
305 310 315 320  
Cys Pro Pro Val Tyr Ala Glu Thr Lys His Phe Leu Tyr Ser Ser Gly  
325 330 335  
Asp Lys Glu Gln Leu Arg Pro Ser Phe Leu Leu Ser Ser Leu Arg Pro  
340 345 350  
Ser Leu Thr Gly Ala Arg Arg Leu Val Glu Thr Ile Phe Leu Gly Ser  
355 360 365  
Arg Pro Trp Met Pro Gly Thr Pro Arg Arg Leu Pro Arg Leu Pro Gln  
370 375 380  
Arg Tyr Trp Gln Met Arg Pro Leu Phe Leu Glu Leu Gly Asn His  
385 390 395 400  
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405 410 415  
Ala Ala Val Thr Pro Ala Ala Gly Val Cys Ala Arg Glu Lys Pro Gln  
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Gly Ser Val Ala Ala Pro Glu Glu Glu Asp Thr Asp Pro Arg Arg Leu  
435 440 445  
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Val Arg Ala Cys Leu Arg Arg Leu Val Pro Pro Gly Leu Trp Gly Ser  
465 470 475 480  
Arg His Asn Glu Arg Arg Phe Leu Arg Asn Thr Lys Lys Phe Ile Ser  
485 490 495  
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500 505 510  
Ser Val Arg Asp Cys Ala Trp Leu Arg Arg Ser Pro Gly Val Gly Cys  
515 520 525  
Val Pro Ala Ala Glu His Arg Leu Arg Glu Glu Ile Leu Ala Lys Phe  
530 535 540  
Leu His Trp Leu Met Ser Val Tyr Val Val Glu Leu Leu Arg Ser Phe  
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Phe Tyr Val Thr Glu Thr Phe Gln Lys Asn Arg Leu Phe Phe Tyr  
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Arg Lys Ser Val Trp Ser Lys Leu Gln Ser Ile Gly Ile Arg Gln His  
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His Arg Glu Ala Arg Pro Ala Leu Leu Thr Ser Arg Leu Arg Phe Ile  
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Pro Lys Pro Asp Gly Leu Arg Pro Ile Val Asn Met Asp Tyr Val Val  
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Gly Ala Arg Thr Phe Arg Arg Glu Lys Arg Ala Glu Arg Leu Thr Ser  
645 650 655  
Arg Val Lys Ala Leu Phe Ser Val Leu Asn Tyr Glu Arg Ala Arg Arg  
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Pro Gly Leu Leu Gly Ala Ser Val Leu Gly Leu Asp Asp Ile His Arg  
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Ala Trp Arg Thr Phe Val Leu Arg Val Arg Ala Gln Asp Pro Pro Pro  
690 695 700  
Glu Leu Tyr Phe Val Lys Val Asp Val Thr Gly Ala Tyr Asp Thr Ile  
705 710 715 720

Pro Gln Asp Arg Leu Thr Glu Val Ile Ala Ser Ile Ile Lys Pro Gln  
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 Asn Thr Tyr Cys Val Arg Arg Tyr Ala Val Val Gln Lys Ala Ala His  
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 Leu Gln Pro Tyr Met Arg Gln Phe Val Ala His Leu Gln Glu Thr Ser  
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 Pro Leu Arg Asp Ala Val Val Ile Glu Gln Ser Ser Ser Leu Asn Glu  
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 Gln Gly Ser Ile Leu Ser Thr Leu Leu Cys Ser Leu Cys Tyr Gly Asp  
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 Met Glu Asn Lys Leu Phe Ala Gly Ile Arg Arg Asp Gly Leu Leu Leu  
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 Arg Leu Val Asp Asp Phe Leu Leu Val Thr Pro His Leu Thr His Ala  
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 Lys Thr Phe Leu Arg Thr Leu Val Arg Gly Val Pro Glu Tyr Gly Cys  
 885 890 895  
 Val Val Asn Leu Arg Lys Thr Val Val Asn Phe Pro Val Glu Asp Glu  
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 Ala Leu Gly Gly Thr Ala Phe Val Gln Met Pro Ala His Gly Leu Phe  
 915 920 925  
 Pro Trp Cys Gly Leu Leu Leu Asp Thr Arg Thr Leu Glu Val Gln Ser  
 930 935 940  
 Asp Tyr Ser Ser Tyr Ala Arg Thr Ser Ile Arg Ala Ser Leu Thr Phe  
 945 950 955 960  
 Asn Arg Gly Phe Lys Ala Gly Arg Asn Met Arg Arg Lys Leu Phe Gly  
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 Val Leu Arg Leu Lys Cys His Ser Leu Phe Leu Asp Leu Gln Val Asn  
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 Ser Leu Gln Thr Val Cys Thr Asn Ile Tyr Lys Ile Leu Leu Gln  
 995 1000 1005

Ala Tyr Arg Phe His Ala Cys Val Leu Gln Leu Pro Phe His Gln Gln  
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 Tyr Val Pro Leu Leu Gly Ser Leu Arg Thr Ala Gln Thr Gln Leu Ser  
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His	Tyr	Arg	Glu	Val	Leu	Pro	Leu	Ala	Thr	Phe	Val	Arg	Arg	Leu	Gly	
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Pro	Gln	Gly	Trp	Arg	Leu	Val	Gln	Arg	Gly	Asp	Pro	Ala	Ala	Phe	Arg	
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Val Ala Arg Val Leu Gln Arg Leu Cys Glu Arg Gly Ala Lys Asn Val	
85 90 95	
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Leu Ala Phe Gly Phe Ala Leu Leu Asp Gly Ala Arg Gly Gly Pro Pro	
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Glu Ala Phe Thr Thr Ser Val Arg Ser Tyr Leu Pro Asn Thr Val Thr	
115 120 125	
gac gca ctg cgg ggg agc ggg gcg tgg ggg ctg ctg cgc cgc gtg	432
Asp Ala Leu Arg Gly Ser Gly Ala Trp Gly Leu Leu Arg Arg Val	
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Gly Asp Asp Val Leu Val His Leu Leu Ala Arg Cys Ala Leu Phe Val	
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Leu Val Ala Pro Ser Cys Ala Tyr Gln Val Cys Gly Pro Pro Leu Tyr	
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cag ctc ggc gct gcc act cag gcc cgg ccc ccg cca cac gct agt gga	576
Gln Leu Gly Ala Ala Thr Gln Ala Arg Pro Pro His Ala Ser Gly	
180 185 190	
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Pro Arg Arg Arg Leu Gly Cys Glu Arg Ala Trp Asn His Ser Val Arg	
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Gly Gly Ser Ala Ser Arg Ser Leu Pro Leu Pro Lys Arg Pro Arg Arg	
225 230 235 240	
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Gly Ala Ala Pro Glu Pro Glu Arg Thr Pro Val Gly Gln Gly Ser Trp	
245 250 255	

gcc cac ccg ggc agg acg cgt gga ccg agt gac cgt ggt ttc tgt gtg	816
Ala His Pro Gly Arg Thr Arg Gly Pro Ser Asp Arg Gly Phe Cys Val	
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Val Ser Pro Ala Arg Pro Ala Glu Glu Ala Thr Ser Leu Glu Gly Ala	
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Leu Ser Gly Thr Arg His Ser His Pro Ser Val Gly Arg Gln His His	
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Ala Gly Pro Pro Ser Thr Ser Arg Pro Pro Arg Pro Trp Asp Thr Pro	
305 310 315 320	
tgt ccc ccg gtg tac gcc gag acc aag cac ttc ctc tac tcc tca ggc	1008
Cys Pro Pro Val Tyr Ala Glu Thr Lys His Phe Leu Tyr Ser Ser Gly	
325 330 335	
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Asp Lys Glu Gln Leu Arg Pro Ser Phe Leu Leu Ser Ser Leu Arg Pro	
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Ser Leu Thr Gly Ala Arg Arg Leu Val Glu Thr Ile Phe Leu Gly Ser	
355 360 365	
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Arg Pro Trp Met Pro Gly Thr Pro Arg Arg Leu Pro Arg Leu Pro Gln	
370 375 380	
cgc tac tgg caa atg cgg ccc ctg ttt ctg gag ctg ctt ggg aac cac	1200
Arg Tyr Trp Gln Met Arg Pro Leu Phe Leu Glu Leu Leu Gly Asn His	
385 390 395 400	
gcg cag tgc ccc tac ggg gtg ctc ctc aag acg cac tgc ccg ctg cga	1248
Ala Gln Cys Pro Tyr Gly Val Leu Leu Lys Thr His Cys Pro Leu Arg	
405 410 415	
gct gcg gtc acc cca gca gcc ggt gtc tgt gcc cgg gag aag ccc cag	1296
Ala Ala Val Thr Pro Ala Ala Gly Val Cys Ala Arg Glu Lys Pro Gln	
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ggc tct gtg gcg gcc ccc gag gag gag gac aca gac ccc cgt cgc ctg	1344
Gly Ser Val Ala Ala Pro Glu Glu Glu Asp Thr Asp Pro Arg Arg Leu	
435 440 445	

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Val Gln Leu Leu Arg Gln His Ser Ser Pro Trp Gln Val Tyr Gly Phe			
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Val Arg Ala Cys Leu Arg Arg Leu Val Pro Pro Gly Leu Trp Gly Ser			
465	470	475	480
agg cac aac gaa cgc cgc ttc ctc agg aac acc aag aag ttc atc tcc	1488		
Arg His Asn Glu Arg Arg Phe Leu Arg Asn Thr Lys Lys Phe Ile Ser			
485	490	495	
ctg ggg aag cat gcc aag ctc tcg ctg cag gag ctg acg tgg aag atg	1536		
Leu Gly Lys His Ala Lys Leu Ser Leu Gln Glu Leu Thr Trp Lys Met			
500	505	510	
agc gtg cgg gac tgc gct tgg ctg cgc agg agc cca ggg gtt ggc tgt	1584		
Ser Val Arg Asp Cys Ala Trp Leu Arg Arg Ser Pro Gly Val Gly Cys			
515	520	525	
gtt ccg gcc gca gag cac cgt ctg cgt gag gag atc ctg gcc aag ttc	1632		
Val Pro Ala Ala Glu His Arg Leu Arg Glu Glu Ile Leu Ala Lys Phe			
530	535	540	
ctg cac tgg ctg atg agt gtg tac gtc gtc gag ctg ctc agg tct ttc	1680		
Leu His Trp Leu Met Ser Val Tyr Val Val Glu Leu Leu Arg Ser Phe			
545	550	555	560
ttt tat gtc acg gag acc acg ttt caa aag aac agg ctc ttt ttc tac	1728		
Phe Tyr Val Thr Glu Thr Phe Gln Lys Asn Arg Leu Phe Phe Tyr			
565	570	575	
cgg aag agt gtc tgg agc aag ttg caa agc att gga atc aga cag cac	1776		
Arg Lys Ser Val Trp Ser Lys Leu Gln Ser Ile Gly Ile Arg Gln His			
580	585	590	
ttg aag agg gtg cag ctg cgg gag ctg tcg gaa gca gag gtc agg cag	1824		
Leu Lys Arg Val Gln Leu Arg Glu Leu Ser Glu Ala Glu Val Arg Gln			
595	600	605	
cat cgg gaa gcc agg ccc gcc ctg ctg acg tcc aga ctc cgc ttc atc	1872		
His Arg Glu Ala Arg Pro Ala Leu Leu Thr Ser Arg Leu Arg Phe Ile			
610	615	620	
ccc aag cct gac ggg ctg cgg ccg att gtg aac atg gac tac gtc gtg	1920		
Pro Lys Pro Asp Gly Leu Arg Pro Ile Val Asn Met Asp Tyr Val Val			
625	630	635	640

gga gcc aga acg ttc cgc aga gaa aag agg gcc gag cgt ctc acc tcg	1968
Gly Ala Arg Thr Phe Arg Arg Glu Lys Arg Ala Glu Arg Leu Thr Ser	
645 650 655	
agg gtg aag gca ctg ttc agc gtg ctc aac tac gag cgg gcg cgg cgc	2016
Arg Val Lys Ala Leu Phe Ser Val Leu Asn Tyr Glu Arg Ala Arg Arg	
660 665 670	
ccc ggc ctc ctg ggc gcc tct gtg ctg ggc ctg gac gat atc cac agg	2064
Pro Gly Leu Leu Gly Ala Ser Val Leu Gly Leu Asp Asp Ile His Arg	
675 680 685	
gcc tgg cgc acc ttc gtg ctg cgt gtg cgg gcc cag gac ccg ccg cct	2112
Ala Trp Arg Thr Phe Val Leu Arg Val Arg Ala Gln Asp Pro Pro Pro	
690 695 700	
gag ctg tac ttt gtc aag gtg gat gtg acg ggc gcg tac gac acc atc	2160
Glu Leu Tyr Phe Val Lys Val Asp Val Thr Gly Ala Tyr Asp Thr Ile	
705 710 715 720	
ccc cag gac agg ctc acg gag gtc atc gcc agc atc atc aaa ccc cag	2208
Pro Gln Asp Arg Leu Thr Glu Val Ile Ala Ser Ile Ile Lys Pro Gln	
725 730 735	
aac acg tac tgc gtg cgt cgg tat gcc gtg gtc cag aag gcc gcc cat	2256
Asn Thr Tyr Cys Val Arg Arg Tyr Ala Val Val Gln Lys Ala Ala His	
740 745 750	
ggg cac gtc cgc aag gcc ttc aag agc cac gtc tct acc ttg aca gac	2304
Gly His Val Arg Lys Ala Phe Lys Ser His Val Ser Thr Leu Thr Asp	
755 760 765	
ctc cag ccg tac atg cga cag ttc gtg gct cac ctg cag gag acc agc	2352
Leu Gln Pro Tyr Met Arg Gln Phe Val Ala His Leu Gln Glu Thr Ser	
770 775 780	
ccg ctg agg gat gcc gtc gtc atc gag cag agc tcc tcc ctg aat gag	2400
Pro Leu Arg Asp Ala Val Val Ile Glu Gln Ser Ser Leu Asn Glu	
785 790 795 800	
gcc agc agt ggc ctc ttc gac gtc ttc cta cgc ttc atg tgc cac cac	2448
Ala Ser Ser Gly Leu Phe Asp Val Phe Leu Arg Phe Met Cys His His	
805 810 815	
gcc gtg cgc atc agg ggc aag tcc tac gtc cag tgc cag ggg atc ccg	2496
Ala Val Arg Ile Arg Gly Lys Ser Tyr Val Gln Cys Gln Gly Ile Pro	
820 825 830	

cag ggc tcc atc ctc tcc acg ctg ctc tgc agc ctg tgc tac ggc gac Gln Gly Ser Ile Leu Ser Thr Leu Leu Cys Ser Leu Cys Tyr Gly Asp 835 840 845	2544
atg gag aac aag ctg ttt gcg ggg att cgg cgg gac ggg ctg ctc ctg Met Glu Asn Lys Leu Phe Ala Gly Ile Arg Arg Asp Gly Leu Leu Leu 850 855 860	2592
cgt ttg gtg gat gat ttc ttg ttg gtg aca cct cac ctc acc cac gcg Arg Leu Val Asp Asp Phe Leu Leu Val Thr Pro His Leu Thr His Ala 865 870 875 880	2640
aaa acc ttc ctg agg acc ctg gtc cga ggt gtc cct gag tat ggc tgc Lys Thr Phe Leu Arg Thr Leu Val Arg Gly Val Pro Glu Tyr Gly Cys 885 890 895	2688
gtg gtg aac ttg cgg aag aca gtg gtg aac ttc cct gta gaa gac gag Val Val Asn Leu Arg Lys Thr Val Val Asn Phe Pro Val Glu Asp Glu 900 905 910	2736
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ccc tgg tgc ggc ctg ctg gat acc cgg acc ctg gag gtg cag agc Pro Trp Cys Gly Leu Leu Leu Asp Thr Arg Thr Leu Glu Val Gln Ser 930 935 940	2832
gac tac tcc agc tat gcc cgg acc tcc atc aga gcc agt ctc acc ttc Asp Tyr Ser Ser Tyr Ala Arg Thr Ser Ile Arg Ala Ser Leu Thr Phe 945 950 955 960	2880
aac cgc ggc ttc aag gct ggg agg aac atg cgt cgc aaa ctc ttt ggg Asn Arg Gly Phe Lys Ala Gly Arg Asn Met Arg Arg Lys Leu Phe Gly 965 970 975	2928
gtc ttg cgg ctg aag tgt cac agc ctg ttt ctg gat ttg cag gtg aac Val Leu Arg Leu Lys Cys His Ser Leu Phe Leu Asp Leu Gln Val Asn 980 985 990	2976
agc ctc cag acg gtg tgc acc aac atc tac aag atc ctc ctg ctg cag Ser Leu Gln Thr Val Cys Thr Asn Ile Tyr Lys Ile Leu Leu Gln 995 1000 1005	3024
gcg tac agg ttt cac gca tgt gtg ctg cag ctc cca ttt cat cag caa Ala Tyr Arg Phe His Ala Cys Val Leu Gln Leu Pro Phe His Gln Gln 1010 1015 1020	3072

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Val Trp Lys Asn Pro Thr Phe Phe Leu Arg Val Ile Ser Asp Thr Ala	
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tcc ctc tgc tac tcc atc ctg aaa gcc aag aac gca ggg atg tcg ctg	3168
Ser Leu Cys Tyr Ser Ile Leu Lys Ala Lys Asn Ala Gly Met Ser Leu	
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ggg gcc aag ggc gcc ggc cct ctg ccc tcc gag gcc gtg cag tgg	3216
Gly Ala Lys Gly Ala Ala Gly Pro Leu Pro Ser Glu Ala Val Gln Trp	
1060 1065 1070	
ctg tgc cac caa gca ttc ctg ctc aag ctg act cga cac cgt gtc acc	3264
Leu Cys His Gln Ala Phe Leu Leu Lys Leu Thr Arg His Arg Val Thr	
1075 1080 1085	
tac gtg cca ctc ctg ggg tca ctc agg aca gcc cag acg cag ctg agt	3312
Tyr Val Pro Leu Leu Gly Ser Leu Arg Thr Ala Gln Thr Gln Leu Ser	
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cgg aag ctc ccg ggg acg acg ctg act gcc ctg gag gcc gca gcc aac	3360
Arg Lys Leu Pro Gly Thr Thr Leu Thr Ala Leu Glu Ala Ala Asn	
1105 1110 1115	1120
ccg gca ctg ccc tca gac ttc aag acc atc ctg gac	3396
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ctgctggaga ggttattcct cg 22  
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Ala Ala Trp Gly Pro Thr Arg Arg Pro Pro Pro Ser Asp Lys Asp Cys  
20 25 30  
Gly Arg Ser Leu Val Ser Ser Pro Asp Ser Trp Gly Ser Thr Pro Ala  
35 40 45

Asp Ser Pro Val Ala Ser Pro Ala Arg Pro Gly Thr Leu Arg Asp Pro  
50 55 60

Arg Ala Pro Ser Val Gly Arg Arg Gly Ala Arg Ser Ser Arg Leu Gly  
65 70 75 80

Ser Gly Gln Arg Gln Ser Ala Ser Glu Arg Glu Lys Leu Arg Met Arg  
85 90 95

Thr Leu Ala Arg Ala Leu His Glu Leu Arg Arg Phe Leu Pro Pro Ser  
100 105 110

Val Ala Pro Ala Gly Gln Ser Leu Thr Lys Ile Glu Thr Leu Arg Leu  
115 120 125

Ala Ile Arg Tyr Ile Gly His Leu Ser Ala Val Leu Gly Leu Ser Glu  
130 135 140

Glu Ser Leu Gln Arg Arg Cys Arg Gln Arg Gly Asp Ala Gly Ser Pro  
145 150 155 160

Arg Gly Cys Pro Leu Cys Pro Asp Asp Cys Pro Ala Gln Met Gln Thr  
165 170 175

Arg Thr Gln Ala Glu Gly Gln Gly Arg Gly Leu Gly Leu Val  
180 185 190

Ser Ala Val Arg Ala Gly Ala Ser Trp Gly Ser Pro Pro Ala Cys Pro  
195 200 205

Gly Ala Arg Ala Ala Pro Glu Pro Arg Asp Pro Pro Ala Leu Phe Ala  
210 215 220

Glu Ala Ala Cys Pro Glu Gly Gln Ala Met Glu Pro Ser Pro Pro Ser  
225 230 235 240

Pro	Leu	Leu	Pro	Gly	Asp	Val	Leu	Ala	Leu	Leu	Glu	Thr	Trp	Met	Pro	
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																250
																255
Leu Ser Pro Leu Glu Trp Leu Pro Glu Glu Pro Lys																
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Met	Ala	Gln	Pro	Leu	Cys	Pro	Pro	Leu	Ser	Glu	Ser	Trp	Met	Leu	Ser	
1				5						10						15
gcg	gcc	tgg	ggc	cca	act	cgg	cgg	ccg	ccc	tcc	gac	aag	gac	tgc		96
Ala	Ala	Trp	Gly	Pro	Thr	Arg	Arg	Pro	Pro	Pro	Ser	Asp	Lys	Asp	Cys	
20					25											30
ggc	cgc	tcc	ctc	gtc	tcg	tcc	cca	gac	tca	tgg	ggc	agc	acc	cca	gcc	144
Gly	Arg	Ser	Leu	Val	Ser	Ser	Pro	Asp	Ser	Trp	Gly	Ser	Thr	Pro	Ala	
35					40											45
gac	agc	ccc	gtg	gcf	agc	ccc	gcf	ccg	cca	ggc	acc	ctc	cgf	gac	ccc	192
Asp	Ser	Pro	Val	Ala	Ser	Pro	Ala	Arg	Pro	Gly	Thr	Leu	Arg	Asp	Pro	
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cgc	gcc	ccc	tcc	gta	ggt	agg	cgc	gcf	ccg	ccg	agc	agc	cgc	ctg	ggc	240
Arg	Ala	Pro	Ser	Val	Gly	Arg	Arg	Gly	Ala	Arg	Ser	Ser	Arg	Leu	Gly	
65					70					75						80
agc	ggg	cag	agg	cag	agc	gcc	agt	gag	cgf	gag	aaa	ctg	cgc	atg	cgc	288
Ser	Gly	Gln	Arg	Gln	Ser	Ala	Ser	Glu	Arg	Glu	Lys	Leu	Arg	Met	Arg	
85					90											95

acg ctg gcc cgc gcc ctg cac gag ctg cgc cgc ttt cta ccg ccg tcc			336
Thr Leu Ala Arg Ala Leu His Glu Leu Arg Arg Phe Leu Pro Pro Ser			
100	105	110	
gtg gcg ccc gcg ggc cag agc ctg acc aag atc gag acg ctg cgc ctg			384
Val Ala Pro Ala Gly Gln Ser Leu Thr Lys Ile Glu Thr Leu Arg Leu			
115	120	125	
gct atc cgc tat atc ggc cac ctg tcg gcc gtg cta ggc ctc agc gag			432
Ala Ile Arg Tyr Ile Gly His Leu Ser Ala Val Leu Gly Leu Ser Glu			
130	135	140	
gag agt ctc cag cgc cgg tgc cgg cag cgc ggt gac gcg ggg tcc cct			480
Glu Ser Leu Gln Arg Arg Cys Arg Gln Arg Gly Asp Ala Gly Ser Pro			
145	150	155	160
cgg ggc tgc ccg ctg tgc ccc gac gac tgc ccc gcg cag atg cag aca			528
Arg Gly Cys Pro Leu Cys Pro Asp Asp Cys Pro Ala Gln Met Gln Thr			
165	170	175	
cgg acg cag gct gag ggg cag ggg cag ggg cgc ggg ctg ggc ctg gta			576
Arg Thr Gln Ala Glu Gly Gln Gly Gln Gly Arg Gly Leu Gly Leu Val			
180	185	190	
tcc gcc gtc cgc gcc ggg gcg tcc tgg gga tcc ccg cct gcc tgc ccc			624
Ser Ala Val Arg Ala Gly Ala Ser Trp Gly Ser Pro Pro Ala Cys Pro			
195	200	205	
gga gcc cga gct gca ccc gag ccg cgc gac ccg cct gcg ctg ttc gcc			672
Gly Ala Arg Ala Ala Pro Glu Pro Arg Asp Pro Pro Ala Leu Phe Ala			
210	215	220	
gag gcg gcg tgc cct gaa ggg cag gcg atg gag cca agc cca ccg tcc			720
Glu Ala Ala Cys Pro Glu Gly Gln Ala Met Glu Pro Ser Pro Pro Ser			
225	230	235	240

ccg ctc ctt ccg ggc gac gtg ctg gct ctg ttg gag acc tgg atg ccc	768		
Pro Leu Leu Pro Gly Asp Val Leu Ala Leu Leu Glu Thr Trp Met Pro			
245	250	255	
ctc tcg cct ctg gag tgg ctg cct gag gag ccc aag	804		
Leu Ser Pro Leu Glu Trp Leu Pro Glu Glu Pro Lys.			
260	265		
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20	25	30	
Thr Gln His Val Arg Glu Gln Ser Leu Val Thr Asp Gln Leu Ser Arg			
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Arg Leu Ile Arg Thr Tyr Gln Leu Tyr Ser Arg Thr Ser Gly Lys His			
50	55	60	
Val Gln Val Leu Ala Asn Lys Arg Ile Asn Ala Met Ala Glu Asp Gly			
65	70	75	80
Asp Pro Phe Ala Lys Leu Ile Val Glu Thr Asp Thr Phe Gly Ser Arg			
85	90	95	
Val Arg Val Arg Gly Ala Glu Thr Gly Leu Tyr Ile Cys Met Asn Lys			
100	105	110	
Lys Gly Lys Leu Ile Ala Lys Ser Asn Gly Lys Gly Lys Asp Cys Val			
115	120	125	

Phe Thr Glu Ile Val Leu Glu Asn Asn Tyr Thr Ala Leu Gln Asn Ala  
130 135 140

Lys Tyr Glu Gly Trp Tyr Met Ala Phe Thr Arg Lys Gly Arg Pro Arg  
145 150 155 160

Lys Gly Ser Lys Thr Arg Gln His Gln Arg Glu Val His Phe Met Lys  
165 170 175

Arg Leu Pro Arg Gly His His Thr Thr Glu Gln Ser Leu Arg Phe Glu  
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Phe Leu Asn Tyr Pro Pro Phe Thr Arg Ser Leu Arg Gly Ser Gln Arg  
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Thr Trp Ala Pro Glu Pro Arg  
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gtc ctc tgc ctc caa gcc cag gta act gtt cag tcc tca cct aat ttt 96  
Val Leu Cys Leu Gln Ala Gln Val Thr Val Gln Ser Ser Pro Asn Phe  
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aca cag cat gtg agg gag cag agc ctg gtg acg gat cag ctc agc cgc 144

Thr Gln His Val Arg Glu Gln Ser Leu Val Thr Asp Gln Leu Ser Arg			
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Arg Leu Ile Arg Thr Tyr Gln Leu Tyr Ser Arg Thr Ser Gly Lys His			
50	55	60	
gtg cag gtc ctg gcc aac aag cgc atc aac gcc atg gca gag gac ggc			240
Val Gln Val Leu Ala Asn Lys Arg Ile Asn Ala Met Ala Glu Asp Gly			
65	70	75	80
gac ccc ttc gca aag ctc atc gtg gag acg gac acc ttt gga agc aga			288
Asp Pro Phe Ala Lys Leu Ile Val Glu Thr Asp Thr Phe Gly Ser Arg			
85	90	95	
gtt cga gtc cga gga gcc gag acg ggc ctc tac atc tgc atg aac aag			336
Val Arg Val Arg Gly Ala Glu Thr Gly Leu Tyr Ile Cys Met Asn Lys			
100	105	110	
aag ggg aag ctg atc gcc aag agc aac ggc aaa ggc aag gac tgc gtc			384
Lys Gly Lys Leu Ile Ala Lys Ser Asn Gly Lys Gly Lys Asp Cys Val			
115	120	125	
ttc acg gag att gtg ctg gag aac aac tac aca gcg ctg cag aat gcc			432
Phe Thr Glu Ile Val Leu Glu Asn Asn Tyr Thr Ala Leu Gln Asn Ala			
130	135	140	
aag tac gag ggc tgg tac atg gcc ttc acc cgc aag ggc cgg ccc cgc			480
Lys Tyr Glu Gly Trp Tyr Met Ala Phe Thr Arg Lys Gly Arg Pro Arg			
145	150	155	160
aag ggc tcc aag acg cgg cag cac cag cgt gag gtc cac ttc atg aag			528
Lys Gly Ser Lys Thr Arg Gln His Gln Arg Glu Val His Phe Met Lys			
165	170	175	
cgg ctg ccc cgg ggc cac cac acc acc gag cag agc ctg cgc ttc gag			576

Arg	Leu	Pro	Arg	Gly	His	His	Thr	Thr	Glu	Gln	Ser	Leu	Arg	Phe	Glu	
180							185						190			
ttc ctc aac tac ccg ccc ttc acg cgc agc ctg cgc ggc agc cag agg															624	
Phe Leu Asn Tyr Pro Pro Phe Thr Arg Ser Leu Arg Gly Ser Gln Arg																
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act tgg gcc ccg gaa ccc cga															645	
Thr Trp Ala Pro Glu Pro Arg																
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1				5				10					15			
Gly Ala Pro Glu Thr Ala Val Leu Gly Ala Glu Leu Ser Ala Val Gly																
20							25						30			
Glu Asn Gly Gly Glu Lys Pro Thr Pro Ser Pro Pro Trp Arg Leu Arg																
35							40						45			
Arg Ser Lys Arg Cys Ser Cys Ser Ser Leu Met Asp Lys Glu Cys Val																
50							55						60			
Tyr Phe Cys His Leu Asp Ile Ile Trp Val Asn Thr Pro Glu His Val																
65							70						75			80
Val Pro Tyr Gly Leu Gly Ser Pro Arg Ser Lys Arg Ala Leu Glu Asn																
85								90					95			
Leu Leu Pro Thr Lys Ala Thr Asp Arg Glu Asn Arg Cys Gln Cys Ala																
100								105					110			

Ser Gln Lys Asp Lys Lys Cys Trp Asn Phe Cys Gln Ala Gly Lys Glu  
115 120 125

Leu Arg Ala Glu Asp Ile Met Glu Lys Asp Trp Asn Asn His Lys Lys  
130 135 140

Gly Lys Asp Cys Ser Lys Leu Gly Lys Lys Cys Ile Tyr Gln Gln Leu  
145 150 155 160

Val Arg Gly Arg Lys Ile Arg Arg Ser Ser Glu Glu His Leu Arg Gln  
165 170 175

Thr Arg Ser Glu Thr Met Arg Asn Ser Val Lys Ser Ser Phe His Asp  
180 185 190

Pro Lys Leu Lys Gly Lys Pro Ser Arg Glu Arg Tyr Val Thr His Asn  
195 200 205

Arg Ala His Trp

210

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Met Asp Tyr Leu Leu Met Ile Phe Ser Leu Leu Phe Val Ala Cys Gln

1

5

10

15

gga gct cca gaa aca gca gtc tta ggc gct gag ctc agc gcg gtg ggt 96

Gly Ala Pro Glu Thr Ala Val Leu Gly Ala Glu Leu Ser Ala Val Gly

20

25

30

gag aac ggc ggg gag aaa ccc act ccc agt cca ccc tgg cgg ctc cgc	35	40	45	144
Glu Asn Gly Gly Glu Lys Pro Thr Pro Ser Pro Pro Trp Arg Leu Arg				
cggtcc aag cgc tgc tcc tgc tcg tcc ctg atg gat aaa gag tgt gtc	50	55	60	192
Arg Ser Lys Arg Cys Ser Cys Ser Leu Met Asp Lys Glu Cys Val				
tac ttc tgc cac ctg gac atc att tgg gtc aac act ccc gag cac gtt	65	70	75	240
Tyr Phe Cys His Leu Asp Ile Ile Trp Val Asn Thr Pro Glu His Val				
gtt ccg tat gga ctt gga agc cct agg tcc aag aga gcc ttg gag aat	85	90	95	288
Val Pro Tyr Gly Leu Gly Ser Pro Arg Ser Lys Arg Ala Leu Glu Asn				
tta ctt ccc aca aag gca aca gac cgt gag aat aga tgc caa tgt gct	100	105	110	336
Leu Leu Pro Thr Lys Ala Thr Asp Arg Glu Asn Arg Cys Gln Cys Ala				
agc caa aaa gac aag aag tgc tgg aat ttt tgc caa gca gga aaa gaa	115	120	125	384
Ser Gln Lys Asp Lys Lys Cys Trp Asn Phe Cys Gln Ala Gly Lys Glu				
ctc agg gct gaa gac att atg gag aaa gac tgg aat aat cat aag aaa	130	135	140	432
Leu Arg Ala Glu Asp Ile Met Glu Lys Asp Trp Asn Asn His Lys Lys				
gga aaa gac tgt tcc aag ctt ggg aaa aag tgt att tat cag cag tta	145	150	155	480
Gly Lys Asp Cys Ser Lys Leu Gly Lys Lys Cys Ile Tyr Gln Gln Leu				
gtg aga gga aga aaa atc aga aga agt tca gag gaa cac cta aga caa	165	170	175	528
Val Arg Gly Arg Lys Ile Arg Arg Ser Ser Glu Glu His Leu Arg Gln				

acc agg tcg gag acc atg aga aac agc gtc aaa tca tct ttt cat gat	576		
Thr Arg Ser Glu Thr Met Arg Asn Ser Val Lys Ser Ser Phe His Asp			
180	185	190	
ccc aag ctg aaa ggc aag ccc tcc aga gag cgt tat gtg acc cac aac	624		
Pro Lys Leu Lys Gly Lys Pro Ser Arg Glu Arg Tyr Val Thr His Asn			
195	200	205	
cga gca cat tgg	636		
Arg Ala His Trp			
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Met Gln His Arg Gly Phe Leu Leu Leu Thr Leu Leu Ala Leu Leu Ala			
1	5	10	15
Leu Thr Ser Ala Val Ala Lys Lys Lys Asp Lys Val Lys Lys Gly Gly			
20	25	30	
Pro Gly Ser Glu Cys Ala Glu Trp Ala Trp Gly Pro Cys Thr Pro Ser			
35	40	45	
Ser Lys Asp Cys Gly Val Gly Phe Arg Glu Gly Thr Cys Gly Ala Gln			
50	55	60	
Thr Gln Arg Ile Arg Cys Arg Val Pro Cys Asn Trp Lys Lys Glu Phe			
65	70	75	80
Gly Ala Asp Cys Lys Tyr Lys Phe Glu Asn Trp Gly Ala Cys Asp Gly			
85	90	95	
Gly Thr Gly Thr Lys Val Arg Gln Gly Thr Leu Lys Lys Ala Arg Tyr			
100	105	110	

Asn Ala Gln Cys Gln Glu Thr Ile Arg Val Thr Lys Pro Cys Thr Pro				
115	120	125		
Lys Thr Lys Ala Lys Ala Lys Lys Gly Lys Gly Lys Asp				
130	135	140		
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Met Gln His Arg Gly Phe Leu Leu Leu Thr Leu Leu Ala Leu Leu Ala				
1	5	10	15	
ctc acc tcc gcg gtc gcc aaa aag aaa gat aag gtg aag aag ggc ggc	96			
Leu Thr Ser Ala Val Ala Lys Lys Asp Lys Val Lys Gly Gly				
20	25	30		
ccg ggg agc gag tgc gct gag tgg gcc tgg ggg ccc tgc acc ccc agc	144			
Pro Gly Ser Glu Cys Ala Glu Trp Ala Trp Gly Pro Cys Thr Pro Ser				
35	40	45		
agc aag gat tgc ggc gtg ggt ttc cgc gag ggc acc tgc ggg gcc cag	192			
Ser Lys Asp Cys Gly Val Gly Phe Arg Glu Gly Thr Cys Gly Ala Gln				
50	55	60		
acc cag cgc atc cgg tgc agg gtg ccc tgc aac tgg aag aag gag ttt	240			
Thr Gln Arg Ile Arg Cys Arg Val Pro Cys Asn Trp Lys Lys Glu Phe				
65	70	75	80	
gga gcc gac tgc aag tac aag ttt gag aac tgg ggt gcg tgt gat ggg	288			
Gly Ala Asp Cys Lys Tyr Lys Phe Glu Asn Trp Gly Ala Cys Asp Gly				

	85	90	95	
ggc aca ggc acc aaa gtc cgc caa ggc acc ctg aag aag gcg cgc tac				336
Gly Thr Gly Thr Lys Val Arg Gln Gly Thr Leu Lys Lys Ala Arg Tyr				
	100	105	110	
aat gct cag tgc cag gag acc atc cgc gtc acc aag ccc tgc acc ccc				384
Asn Ala Gln Cys Gln Glu Thr Ile Arg Val Thr Lys Pro Cys Thr Pro				
	115	120	125	
aag acc aaa gca aag gcc aaa gcc aag aaa ggg aag gga aag gac				429
Lys Thr Lys Ala Lys Ala Lys Lys Gly Lys Gly Lys Asp				
	130	135	140	
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Met Ile Pro Gly Asn Arg Met Leu Met Val Val Leu Leu Cys Gln Val				
	1	5	10	15
Leu Leu Gly Gly Ala Ser His Ala Ser Leu Ile Pro Glu Thr Gly Lys				
	20	25	30	
Lys Lys Val Ala Glu Ile Gln Gly His Ala Gly Gly Arg Arg Ser Gly				
	35	40	45	
Gln Ser His Glu Leu Leu Arg Asp Phe Glu Ala Thr Leu Leu Gln Met				
	50	55	60	
Phe Gly Leu Arg Arg Arg Pro Gln Pro Ser Lys Ser Ala Val Ile Pro				
	65	70	75	80
Asp Tyr Met Arg Asp Leu Tyr Arg Leu Gln Ser Gly Glu Glu Glu				
	85	90	95	

Glu Gln Ile His Ser Thr Gly Leu Glu Tyr Pro Glu Arg Pro Ala Ser  
100 105 110

Arg Ala Asn Thr Val Arg Ser Phe His His Glu Glu His Leu Glu Asn  
115 120 125

Ile Pro Gly Thr Ser Glu Asn Ser Ala Phe Arg Phe Leu Phe Asn Leu  
130 135 140

Ser Ser Ile Pro Glu Asn Glu Ala Ile Ser Ser Ala Glu Leu Arg Leu  
145 150 155 160

Phe Arg Glu Gln Val Asp Gln Gly Pro Asp Trp Glu Arg Gly Phe His  
165 170 175

Arg Ile Asn Ile Tyr Glu Val Met Lys Pro Pro Ala Glu Val Val Pro  
180 185 190

Gly His Leu Ile Thr Arg Leu Leu Asp Thr Arg Leu Val His His Asn  
195 200 205

Val Thr Arg Trp Glu Thr Phe Asp Val Ser Pro Ala Val Leu Arg Trp  
210 215 220

Thr Arg Glu Lys Gln Pro Asn Tyr Gly Leu Ala Ile Glu Val Thr His  
225 230 235 240

Leu His Gln Thr Arg Thr His Gln Gly Gln His Val Arg Ile Ser Arg  
245 250 255

Ser Leu Pro Gln Gly Ser Gly Asn Trp Ala Gln Leu Arg Pro Leu Leu  
260 265 270

Val Thr Phe Gly His Asp Gly Arg Gly His Ala Leu Thr Arg Arg Arg  
275 280 285

Arg Ala Lys Arg Ser Pro Lys His His Ser Gln Arg Ala Arg Lys Lys  
290 295 300

Asn Lys Asn Cys Arg Arg His Ser Leu Tyr Val Asp Phe Ser Asp Val  
305 310 315 320

Gly Trp Asn Asp Trp Ile Val Ala Pro Pro Gly Tyr Gln Ala Phe Tyr  
325 330 335

Cys His Gly Asp Cys Pro Phe Pro Leu Ala Asp His Leu Asn Ser Thr  
340 345 350

Asn His Ala Ile Val Gln Thr Leu Val Asn Ser Val Asn Ser Ser Ile  
355 360 365

Pro Lys Ala Cys Cys Val Pro Thr Glu Leu Ser Ala Ile Ser Met Leu  
370 375 380

Tyr Leu Asp Glu Tyr Asp Lys Val Val Leu Lys Asn Tyr Gln Glu Met  
385 390 395 400

Val Val Glu Gly Cys Gly Cys Arg  
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Met Ile Pro Gly Asn Arg Met Leu Met Val Val Leu Leu Cys Gln Val  
1 5 10 15

ctg cta gga ggc gcg agc cat gct agt ttg ata cct gag acg ggg aag 96

Leu	Leu	Gly	Gly	Ala	Ser	His	Ala	Ser	Leu	Ile	Pro	Glu	Thr	Gly	Lys		
20															30		
aaa	aaa	gtc	gcc	gag	att	cag	ggc	cac	gct	gga	gga	cgc	cgc	tca	ggg	144	
Lys	Lys	Val	Ala	Glu	Ile	Gln	Gly	His	Ala	Gly	Gly	Arg	Arg	Ser	Gly		
35															45		
cag	agc	cat	gag	ctc	ctg	cgg	gac	ttc	gag	gct	aca	ctt	ctg	cag	atg	192	
Gln	Ser	His	Glu	Leu	Leu	Arg	Asp	Phe	Glu	Ala	Thr	Leu	Leu	Gln	Met		
50															60		
ttt	ggg	ctg	cgc	cgc	cgc	ccg	cag	cct	agc	aag	agt	gcc	gtc	att	ccg	240	
Phe	Gly	Leu	Arg	Arg	Arg	Pro	Gln	Pro	Ser	Lys	Ser	Ala	Val	Ile	Pro		
65															80		
gac	tac	atg	cg	gat	ctt	ta	cg	ctt	ca	tct	ggg	gag	gag	gag	gaa	288	
Asp	Tyr	Met	Arg	Asp	Leu	Tyr	Arg	Leu	Gln	Ser	Gly	Glu	Glu	Glu	Glu		
85															95		
gag	cag	atc	ca	agc	act	ggt	ctt	gag	tat	cct	gag	cgc	ccg	gcc	agc	336	
Glu	Gln	Ile	Ser	Thr	Gly	Leu	Glu	Tyr	Pro	Glu	Tyr	Pro	Glu	Arg	Pro	Ala	Ser
100															110		
cg	gg	cc	aa	cc	gt	gg	ag	ag	tt	ca	ca	ga	ga	ca	tt	384	
Arg	Ala	Asn	Thr	Val	Arg	Ser	Phe	His	His	Glu	Glu	His	Leu	Glu	Asn		
115															125		
atc	cca	ggg	acc	agt	gaa	aac	tct	gct	ttt	cgt	ttc	ctc	ttt	aac	ctc	432	
Ile	Pro	Gly	Thr	Ser	Glu	Asn	Ser	Ala	Phe	Arg	Phe	Leu	Phe	Asn	Leu		
130															140		
agc	agc	atc	cct	gag	aac	gag	gct	atc	tcc	tct	gca	gag	ctt	cgg	ctc	480	
Ser	Ser	Ile	Pro	Glu	Asn	Glu	Ala	Ile	Ser	Ser	Ala	Glu	Leu	Arg	Leu		
145															160		
ttc	cgg	gag	cag	gt	g	ac	cag	gg	cct	gat	tgg	gaa	agg	gg	cac	528	

Phe Arg Glu Gln Val Asp Gln Gly Pro Asp Trp Glu Arg Gly Phe His			
165	170	175	
cgt ata aac att tat gag gtt atg aag ccc cca gca gaa gtg gtg cct 576			
Arg Ile Asn Ile Tyr Glu Val Met Lys Pro Pro Ala Glu Val Val Pro			
180	185	190	
ggg cac ctc atc aca cga cta ctg gac acg aga ctg gtc cac cac aat 624			
Gly His Leu Ile Thr Arg Leu Leu Asp Thr Arg Leu Val His His Asn			
195	200	205	
gtg aca cgg tgg gaa act ttt gat gtg agc cct gcg gtc ctt cgc tgg 672			
Val Thr Arg Trp Glu Thr Phe Asp Val Ser Pro Ala Val Leu Arg Trp			
210	215	220	
acc cgg gag aag cag cca aac tat ggg cta gcc att gag gtg act cac 720			
Thr Arg Glu Lys Gln Pro Asn Tyr Gly Leu Ala Ile Glu Val Thr His			
225	230	235	240
ctc cat cag act cgg acc cac cag ggc cag cat gtc agg att agc cga 768			
Leu His Gln Thr Arg Thr His Gln Gly Gln His Val Arg Ile Ser Arg			
245	250	255	
tcg tta cct caa ggg agt ggg aat tgg gcc cag ctc cgg ccc ctc ctg 816			
Ser Leu Pro Gln Gly Ser Gly Asn Trp Ala Gln Leu Arg Pro Leu Leu			
260	265	270	
gtc acc ttt ggc cat gat ggc cgg ggc cat gcc ttg acc cga cgc cgg 864			
Val Thr Phe Gly His Asp Gly Arg Gly His Ala Leu Thr Arg Arg Arg			
275	280	285	
agg gcc aag cgt agc cct aag cat cac tca cag cgg gcc agg aag aag 912			
Arg Ala Lys Arg Ser Pro Lys His His Ser Gln Arg Ala Arg Lys Lys			
290	295	300	
aat aag aac tgc cgg cgc cac tcg ctc tat gtg gac ttc agc gat gtg 960			

Asn Lys Asn Cys Arg Arg His Ser Leu Tyr Val Asp Phe Ser Asp Val				
305	310	315	320	
ggc tgg aat gac tgg att gtg gcc cca cca ggc tac cag gcc ttc tac				1008
Gly Trp Asn Asp Trp Ile Val Ala Pro Pro Gly Tyr Gln Ala Phe Tyr				
325	330	335		
tgc cat ggg gac tgc ccc ttt cca ctg gct gac cac ctc aac tca acc				1056
Cys His Gly Asp Cys Pro Phe Pro Leu Ala Asp His Leu Asn Ser Thr				
340	345	350		
aac cat gcc att gtg cag acc ctg gtc aat tct gtc aat tcc agt atc				1104
Asn His Ala Ile Val Gln Thr Leu Val Asn Ser Val Asn Ser Ser Ile				
355	360	365		
ccc aaa gcc tgt tgt gtg ccc act gaa ctg agt gcc atc tcc atg ctg				1152
Pro Lys Ala Cys Cys Val Pro Thr Glu Leu Ser Ala Ile Ser Met Leu				
370	375	380		
tac ctg gat gag tat gat aag gtg gta ctg aaa aat tat cag gag atg				1200
Tyr Leu Asp Glu Tyr Asp Lys Val Val Leu Lys Asn Tyr Gln Glu Met				
385	390	395	400	
gta gta gag gga tgt ggg tgc cgc				1224
Val Val Glu Gly Cys Gly Cys Arg				
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ccacgtcacg caggtcccg t c 22

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gggtgctcag gtagtggtt 19